THE IRON TRADE REVIEW

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# Increasing Activity of Mills

## Causes More Cheerful Feeling—Prices of Finished Materials Fairly Firm—Inquiry for Basic Pig Iron in Several Centers

More cheerful news comes from the finishing mills and indications are that the leading independent companies are doing fully as well as the Steel Corporation. One important independent company in eastern Pennsylvania booked last week the largest tonnage of any week in six or eight months and several independent steel companies, including the Brier Hill Steel Co., at Youngstown, are operating at full capacity. While the 1.20c, Pittsburgh, price has not been fully established on shapes, plates and bars for second quarter delivery, some sales are being made at that price, and bars, particularly, are strong.

The talk of peace is tending to check new export business, but in the case of some important foreign business, assurance is given that it is not for war purposes. This is true particularly of business pending from Germany.

**Pig Iron**

Following the recent very heavy sales of Buffalo iron and advances in prices by makers in that city, additional inquiries amounting to some 60,000 tons have appeared and still higher quotations seem probable. More interest is being shown by users of basic pig iron in the Chicago, Philadelphia and Pittsburgh markets. A German syndicate is inquiring for 50,000 tons of bessemer for shipment during the next six months.

**Bars**

In addition to 90,000 metric tons of steel rounds placed with the Carnegie and Lackawanna Steel companies for shipment to French manufacturers to manufacture shrapnel, a number of orders have been sublet by a Canadian company, and the Hydraulic Pressed Steel Co., Cleveland, has placed an order for 3,700 tons with the Lackawanna Steel Co.

**Billets**

Orders have been placed for shipment of semi-finished material to foreign countries, including 10,000 tons of ingot crops for Italy and 1,000 tons of billets for England. It is understood that recent business has been placed at an advance of from $1 to $2 per ton, compared with earlier transactions.

**Shapes and Plates**

Two more boats have been ordered to be built in eastern ship yards, making a total of 26 contracted for since the activity in ship building was inaugurated last December. Grade crossing work in Philadelphia will require a large tonnage of structural material and it is expected that some of it will be placed soon.

**Machinery**

Large orders for machinery continue to be placed for Russia, England and France. While in some cases only the steel rounds are purchased and shrapnel manufactured in foreign countries, some American companies are taking contracts for manufacturing the finished product. A projectile company with a capital of $2,000,000 has been incorporated at Bridgeport, Conn., and is figuring on buying a large amount of machinery. A Cincinnati machine tool manufacturer has just closed an order for shipment of 140 lathes to Petrograd. Contracts for machinery made with Cincinnati companies since war was declared are estimated to amount to $7,000,000, and shops in that city are now receiving more inquiries than they can take care of.

# THE OPEN HEARTH

## Grasping War Opportunities

ENFORCED breaking of commercial ties with certain foreign countries, especially Germany, as the result of war conditions, has brought inconvenience and loss to certain lines of manufacture in the United States, but there also have been compensating effects in which the steel industry manifestly is sharing. The launching in recent months of no less than a half dozen benzol recovery plants in connection with by-product coke works with an estimated output of 15,000,000 to 20,000,000 gallons of benzol annually and of other enterprises of similar or connected character, now taking form, demonstrates one important line of new industry in this country that clearly is the product of these conditions.

By reason of her many years of by-product development, Germany has been the acknowledged leader in the making of benzol and its distillates. Her crippled position as an exporter to this country at present, together with a direct war demand for certain refined products of benzol such as the high explosives tuluol, picric acid, etc., have given the steelmakers in this country the opportunity to develop a new branch of their business. Such prices as 80 to 90 cents a pound for carbolic acid, compared with 7 and 7½ cents before the war, $1 a pound for tuluol and similar market values for other derivatives of benzol explain the haste with which these manufacturers now are pushing the completion of their new plants. Large profits are the promised reward of early operation.

These high prices are purely war values and are not likely to continue for long. They do not alter the fact, however, that there always has been a good market for benzol products in this country, which Germany has enjoyed in a large measure. The great dependence of the United States upon that country for aniline dyes derived from benzol illustrates one branch of this trade. It is a commonly-stated trade fact that sporadic efforts to make aniline dyes in this country in the past always have been stifled by German competition through cut prices in which costs were disregarded. That this condition must and will be radically changed goes without saying. Plants now are under construction in this country for the manufacture of aniline dyes and others are projected. The use of commercial benzol for automobiles in this country undoubtedly offers a large field which has been scarcely touched.

The question now arises as to the future of this new industry. When the war is ended, Germans and other foreign makers will attempt to recoup their shattered trade. That these infant enterprises will need careful and watchful attention in national legislation, is certain. The minimum protection that will be required will be the difference in the labor cost in the production of benzol at home and abroad. That it should be given and in ample degree, every patriotic and true American will agree. What the steelmakers of the country now are doing represents a genuinely constructive undertaking. They are advancing the proclaimed national policy of conservation and of elimination of waste and are making the country more self-contained for supplies for which it has been dependent on other nations.

## The Daily Press and the War News

TREATMENT by the American daily press of news arising from the European war is cause for great admiration. It is as fair and accurate as human agency can make it, is splendidly devoid of the semblance of hysteria, such as might easily involve this country in serious entanglements, and, it seems, has again demonstrated that American journalism is equal to any situation. The present one is unprecedented in the history of the world, but, in the face of that contingency, natural prejudices are cast aside to give way to facts as nearly as they can be possibly gathered. National pride may prompt the expression, but, with all respect for the foreign press, it seems not unfair to say that American newspaper method and style are superior to any other in obtaining and disseminating information. The breezy, well-dressed and accurate war news and interviews

# THE OPEN HEARTH

coming from American correspondents are in themselves substantial proof of superiority.

Necessarily, there are exceptions, where complimentary remarks would not apply. They, however, only prove the rule, and can have no influence worth the name. For those who understand even the rudiments of journalism, with its constant pressure of time and space, and other tremendous demands, the accuracy of the American daily press and its fine sense of discrimination shown in handling news in connection with the war are matters for which the people of the United States should grant unstinted commendation.

This little tribute to the American daily press is not written with any idea of disapproving the action taken recently in a very quiet way by President Wilson in admonishing representatives of the press not to publish anything that was at all likely to result in marring the cordial relations of the United States and one or more of the nations at war. We believe it is the President's duty to do his utmost to prevent anything being done by citizens of this republic that could be reasonably regarded with disfavor by any of the nations at war.

## Drink Not the Only Curse

THE great war is bringing England, as well as Russia and other countries, to a realization of the enormity of the curse of drunkenness. The present outlook is that prohibition will be adopted in England, at least for the period of the war, and if its success is established, it is not at all probable that there will ever be a return to the lawful sale of intoxicating liquors. The result will be that England will be tremendously strengthened industrially and other nations, including the United States, in order to compete, may be compelled to adopt the same policy.

The problem presented by excessive indulgence in intoxicating liquors is not, however, the only one connected with the workingmen which confronts England today. Drunkenness is making itself so prominent and so disgusting that public sentiment is thoroughly aroused against it. But what shall we say of the more insidious trouble due to the promulgation for years of unsound economic doctrines? It is indeed a humiliating picture which is painted by *The Iron and Coal Trades Review*, of London, when it tells of the plan of Lloyd George, chancellor of the exchequer, to take over control of great industries and, in order to satisfy the workingmen, to impose a limitation of profits, and of how the spirit of discontent fomented during years of agitation has become such that in war time, with the kingdom facing one of the most serious crises in its history, when employment is abundant, when wages are higher than usual, when prices of food have advanced only moderately, large bodies of men refuse to work over-time, deliberately curtail output and actually strike when engaged in the production of munitions of war imperatively needed on the battle field.

This unpatriotic attitude of many workingmen is not due primarily to lack of love of country, but to the fact that they have been misled. "For many years," says *The Iron and Coal Trades Review*, "socialists have preached that capitalism is robbery and that in a co-operative commonwealth, with all the instruments owned and managed by the state, the robbery would be stopped and labor conditions vastly improved." The *Review*, continuing, shows how, by distorting facts and figures, false impressions have been created. Even chancellors of the exchequer have helped to feed the flames of discontent. No wonder, then, that workingmen have become disloyal and that Lloyd George is driven to the extreme measure of taking charge of industries and limiting profits.

Is there not in all this a lesson for the United States? We have had on this side of the Atlantic a great deal of the same kind of agitation that has brought Great Britain into its present sad plight. It is high time for the American people to resist more vigorously the demagogue in politics, the labor agitator and all others who by making false statements and all sorts of vicious declarations mislead thousands of workingmen and plant in their hearts a feeling of discontent, if not, indeed, hatred for their country.

## Prices Present and Past

*Quotations on leading products April 7, average for March, 1915, average for January, 1915, and average for April, 1914. Prices are those ruling in the largest percentage of sales at the dates named.*

| | Prices Apr. 7, 1915. | Average for Mar., 1915. | Average for Jan., 1915. | Aver. for Apr. 1914. |
|---|---|---|---|---|
| Bessemer pig iron, Pittsburgh.. | $14.55 | $14.55 | $14.70 | $14.90 |
| Basic pig iron, Pittsburgh..... | 13.45 | 13.45 | 13.45 | 13.90 |
| No. 2 Fdy. pig iron, Pittsburgh | 13.70 | 13.80 | 13.70 | 14.15 |
| Northern No. 2 Fdy., Chgo.... | 13.00 | 13.00 | 13.00 | 14.25 |
| Lake Superior Charcoal, Chgo.. | 15.75 | 15.75 | 15.75 | 15.50 |
| Malleable, Bessemer, Chgo..... | 13.00 | 13.00 | 13.00 | 14.25 |
| Southern No. 2, Birmingham... | 9.50 | 9.50 | 9.50 | 10.50 |
| Southern Ohio No. 2, Ironton.. | 12.75 | 12.75 | 12.75 | 13.50 |
| Basic, eastern Pa..... | 14.00 | 14.00 | 13.50 | 14.25 |
| No. 2X Virginia furnace..... | 12.50 | 12.50 | 12.50 | 12.75 |
| No. 2X Foundry, Philadelphia.. | 14.50 | 14.25 | 14.25 | 15.00 |
| Ferro mang., Balti. (prompt)... | 100.00 | 100.00 | 68.00* | 38.00 |
| Billets, Pbgh. ..... | 19.00 | 19.50 | 19.50 | 20.80 |
| Sheet bars, Pbgh..... | 20.00 | 20.00 | 20.00 | 21.60 |
| Steel bars, Chicago..... | 1.39 | 1.34 | 1.29 | 1.33 |
| Steel bars, Pittsburgh..... | 1.20 | 1.10 | 1.10 | 1.15 |
| Iron bars, Philadelphia..... | 1.125 | 1.125 | 1.12 | 1.22 |
| Iron bars, Cleveland, local del'y | 1.205 | 1.15 | 1.15 | 1.20 |
| Iron bars, Chgo. mill..... | 1.15 | 1.10 | 0.98 | 1.15 |

*Nominal.

| | Prices Apr. 7, 1915. | Average for Mar., 1915. | Average for Jan., 1915. | Aver. for Apr., 1914. |
|---|---|---|---|---|
| Beams, Chicago ..... | $1.34 | $1.34 | $1.29 | $1.35 |
| Beams, Pittsburgh ..... | 1.15 | 1.15 | 1.10 | 1.18 |
| Beams, Philadelphia ..... | 1.309 | 1.25 | 1.25 | 1.30 |
| Tank plates, Pittsburgh..... | 1.15 | 1.125 | 1.10 | 1.15 |
| Tank plates, Chicago..... | 1.34 | 1.34 | 1.29 | 1.32 |
| Tank plates, Philadelphia..... | 1.309 | 1.25 | 1.25 | 1.30 |
| Sheets, blk., No. 28, Pittsburgh | 1.80 | 1.80 | 1.80 | 1.92 |
| Sheets, blue an., No. 10, Pbgh.. | 1.30 | 1.30 | 1.30 | 1.40 |
| Sheets, galv., No. 28, Pbgh.... | 3.40 | 3.40 | 2.77 | 2.92 |
| Wire nails, Pittsburgh..... | 1.60 | 1.60 | 1.51 | 1.60 |
| Connellsville fur. coke contr.... | 1.65 | 1.65 | 1.69 | 2.00 |
| Connellsville fdy. coke, contr... | 2.25 | 2.25 | 2.25 | 2.50 |
| Heavy melting steel, Pbgh..... | 12.00 | 12.00 | 11.55 | 12.00 |
| Heavy melting steel, east'n Pa. | 11.00 | 10.50 | 9.50 | 11.50 |
| Heavy melting steel, Chgo..... | 9.25 | 9.75 | 8.87 | 9.50 |
| No. 1 wrought eastern Pa..... | 12.50 | 12.00 | 11.50 | 13.00 |
| No. 1 wrought, Chgo..... | 8.50 | 9.00 | 8.80 | 8.50 |
| Rerolling rails, Chgo..... | 10.00 | 10.00 | 9.50 | 11.25 |
| Car wheels, Chgo..... | 9.75 | 10.00 | 10.00 | 11.00 |

(For Additional Prices See Page 742.)

# More Inquiry for Steel Making Iron

### Heavy Tonnage Wanted by a German Syndicate—Bessemer Sold for Shipment to Italy—Pennsylvania Consumer Sounding Market on Basic

Pittsburgh, April 6.—Representatives of several foreign interests have asked options on steel-making grades of pig iron in this district, for shipment abroad the next six months. One agent is acting for a German syndicate, which wants an option on a rather heavy tonnage. Fifty thousand tons of bessemer iron are involved in one of the inquiries sent out by foreign interests. The Shenango Furnace Co. has taken an additional order for 1,500 tons of bessemer iron for shipment to Italy, making a total of 2,500 tons. The domestic market for steel-making grades is quiet. Tentative inquiry for both bessemer and basic for last half shipment has come out, but no orders have been placed in the open market. Neither grade showed any change in position in March, according to monthly averages compiled by W. P. Snyder & Co.; bessemer established an average of $13.60, and basic an average of $12.50, valley. Foundry grades are fairly active, but sales involve small tonnages. No. 2 foundry is being held at $13, valley, by some interests, but an attractive tonnage could be obtained at $12.75, valley, and reports are heard of iron being offered at the equivalent of $12.50, valley furnace.

#### Inquiry For 60,000 Tons

Buffalo, April 6.—The sale of nearly 350,000 tons of pig iron by the furnaces of the Buffalo district in the past two weeks instead of covering the needs of users has left fully half a dozen large consumers seeking to cover their requirements for third quarter and last half, to the extent of 60,000 tons, and at prices higher than those that prevailed during the big drive. The heavy tonnage inquiries include a considerable quantity of malleable, which figured as merely a fraction of the selling movement orders booked. The absence of malleable in the buying was commented upon at the time.

So far the new inquiries have been quoted a price of $13 at the furnace for prompt deliveries. One interest until late today held that the price for second and third quarter or last half delivery was $12.50 to $13 on the various grades of foundry irons with the higher price being asked on the better grades. The majority of the producing interests of the district are asking $13 to $13.50, making the spread for the week $12.50 to $13.50, covering the low to high silicon irons. The interest backward in advancing its schedule sold a nominal tonnage today at $13.25 for early delivery. It is believed that by the end of the week no iron will be available at less than $13.

The price of $12.50 to $13 established at the end of the selling movement a week ago for second quarter deliveries is disappearing because the furnaces of the Buffalo district are virtually oversold for second quarter needs and are in the position of being able to book, for the most part, only iron that will be wanted for third quarter and last half deliveries and at the advance over second quarter business to $13 to $13.50.

The anticipated heavy volume of specifying for iron under contract, from consumers who entered the big buying movement, is now coming in for April deliveries. Most of the buyers protected themselves by securing extended deliveries in their contracts, but they are taking advantage of the privilege extended to them to anticipate their needs and are now asking for early shipments. In a number of instances, large portions of the iron contracted for during the drive have been or are being ordered out. At the close of the movement, the American Radiator Co. came into the Buf-

(*For complete prices see page 742.*)

falo market and booked 20,000 to 25,000 tons.

### Basic Tonnage in View

Philadelphia, April 5.—More attention is being given to their third and fourth quarter needs by consumers in this territory, though in most instances these negotiations are being carried on informally. A leading eastern Pennsylvania steel maker is sounding the market on forward basic and is likely to close for a round tonnage shortly. Basic has been in a nominal price position for some weeks in the absence of any sales, and the quotable figure of $14, delivered eastern Pennsylvania, probably can be shaded. There is some figuring on foundry iron for delivery after July and one sale of 800 tons has been put through, though generally eastern Pennsylvania producers are inclined to avoid quoting so far ahead. It now is understood that foundry iron quotations for third quarter or beyond have been made to approximate the general level of the current market, or $14.50, Philadelphia, for No. 2X. This figure for early delivery is subject to some shading and probably the same condition applies on certain brands to forward periods. Central Pennsylvania makers usually ask from $12.75 to $13, furnace, for No. 2X, though lower has been done to distant points. Low phosphorus sales are small. One good tonnage for last half for a leading eastern buyer is pending. Some makers have not been shipping so freely and have been accumulating some stock. Prices remain at $20, Philadelphia, for standard quality especially low in phosphorus, at $19 for slightly higher phosphorus and at $16 to $16.50, furnace for Lebanon brands.

### Local Inquiry Out

Cincinnati, April 6.—The American Stove Co., St. Louis, is inquiring for 2,000 tons of southern iron for its Bedford, O., plant, and the Laidlaw-Dunn-Gordon Co. wants 1,000 tons of southern iron for its local branch. An inquiry for 2,000 tons of southern iron is pending from Chicago, and a Detroit firm will buy 1,500 tons of southern iron for its St. Louis plant. Another local concern has offered to buy several thousand tons at $9.25, Birmingham basis, for No. 2 foundry, but cannot find any furnace which will accept this figure. A little resale iron has appeared upon the market, but as it is being sold secretly and in very small lots, its effect has not been noticed by the general market. The prices made on it are uncertain, but the average is thought to be around $9.50, Birmingham basis. Furnaces in both Alabama and Tennessee are holding No. 2 foundry at $9.50, Birmingham basis, mostly for first half delivery, but some will sell through the year at this figure. A number of offers have been made southern Ohio furnaces recently at $12.50, Ironton basis, for No. 2 foundry, but these have been refused, and the prevailing quotation is still $12.75, Ironton, for this grade.

### Melt Increasing

Cleveland, April 6.—The pig iron market in the Cleveland district is very dull. For delivery in the city, $13, furnace, for No. 2 is adhered to, but $12.50, furnace, has been shaded for delivery outside the city. The melt is increasing and shipments are very satisfactory.

### Basic Inquiries Are Out

Chicago, April 6.—Entry of two or three basic melters into the market is the feature of the present situation. One inquiry by a concern having several plants is for about 10,000 tons and another with a plant near Chicago is asking for a smaller tonnage. Neither inquiry has developed yet to where buying is imminent and it is not known whether the iron is for immediate use or might be taken for speculation.

Somewhat enlarged inquiry for foundry iron is apparent, inquiries ranging from 200 tons to 2,000 tons, some being for second quarter and more for third quarter and last half.

Makers are holding firmly to $13, Chicago furnace, for second quarter, with 50-cent premium for last half. Conditions in other markets having a bearing on this territory indicate that the advance in price may be difficult to maintain, although some makers are firm in the belief the latter half of the year will see much better conditions and a higher price obtained without difficulty.

One furnace company is considering seriously blowing-in another stack, but has not yet found the market ready to assimilate the added tonnage.

Southern iron is being disposed of for second quarter at $9.50, Birmingham, and quotations of $10, Birmingham, are being made in a number of instances on inquiries for delivery after July 1.

Numerous sales of small tonnages have been made recently to melters in Illinois, southern Wisconsin and southern Michigan and an increase of the melt is evident, this being borne out also by increased shipments of foundry coke.

### Inquiry for Charcoal

St. Louis, April 5.—An inquiry for 600 tons of Lake Superior charcoal iron for delivery over the second quarter is about the only outlook for business at present. Sales last week were confined to car lots. Southern iron is quoted at $9.50, $9.75 and $10, Birmingham, but there is little trouble to obtain the lower price. Northern iron is held at $13, Ironton and Chicago.

### Good Inquiry

Birmingham, Ala., April 5.—Some good-sized inquiries are reported in the Birmingham pig iron market, but iron interests deny that any sales have been closed. It is understood that a large buyer is asking for $9.25 iron and the makers are holding out for $9.50. Otherwise the events of the week are without consequence.

### Some Promising Inquiries

New York, April 6.—A larger number of export negotiations for pig iron than have been in the market at any one time yet, are receiving the attention of sellers in this territory. Some of these matters are so lacking in definiteness and in other essentials that not much faith is placed in them. Others are more promising and have resulted in some further fair tonnages being booked where sellers have been able to effect proper freight accommodation. A sale of 1,500 tons additional of valley bessemer for Italy, making 2,500 tons of this grade taken recently by the same maker, has been made. This iron, it is understood, was placed at about $16, tidewater. Central Pennsylvania makers have sold several hundred tons of foundry as a trial lot to Italy. An interesting matter now in the market involves the possibility of the British government taking a large tonnage of a special quality of iron in this country. This matter may be settled shortly. A proposition of one agent to take an option on a large tonnage of an unspecified grade for the British Isles has come out, but is not being very seriously considered. Other inquiries include 20,000 tons of low silicon, high manganese and high phosphorus iron for August or later shipment for England; 3,000 to 4,000 tons of low phosphorus for France and several lots of 1,000 to 2,000 of basic for the British Isles. More inquiry for third quarter and last half is being put out by domestic consumers, some of which, undoubtedly, is to round out mixtures after recent purchases of Buffalo iron. The International Steam Pump Co. has asked for 5,000 to 6,000 tons of No. 2X, No. 2 plain, high silicon foundry and low phosphorus, for last half for Harrison, N. J., Elmwood Place, O., Buffalo and East Cambridge, Mass.;

(*For complete prices see page* 742.)

a railroad equipment shop is inquiring for 2,000 tons for western shipment; a Bridgeport, Conn., valve maker for 1,000 tons; a Somerville, N. J., consumer for 1,000 to 2,000 tons, while a pipe manufacturer has been figuring on 5,000 tons, chiefly with southern furnaces. A more settled condition of the market in New England and in districts surrounding this city, is shown since the advance by Buffalo makers. Sales made by other makers at competitive points in New England the past week have netted better than $12.75, Buffalo, equivalent. One of the leading Buffalo sellers who was active in the recent movement, has withdrawn $12.50, furnace, for second quarter and advanced to $13, with the likelihood also of dropping soon the latter figure for third quarter or last half. The Jersey tidewater market at present appears at about $14.25 to $14.50 for No. 2X.

# More Plates for Export

## Eastern Mills Show Encouraging Increase—Sales Still Made at 1.10c, Pittsburgh, in Central West

Philadelphia, April 6.—Encouraging enlargement in the volume of new plate business is reported by several eastern Pennsylvania makers. One well-known mill last week entered the best tonnage of any week in six to eight months, which considerably exceeded its capacity. This tonnage came from various miscellaneous sources, including some additional shipyard steel and a hopeful sign was the including of some fair orders from the railroads, evidently for repair work. Another eastern Pennsylvania plate mill has been maintaining full operations for the past three weeks. This mill in the week closed 1,000 tons of ship plates additional for the British Isles at 1.25c, New York, or slightly less than 1.14c, Pittsburgh, making 1,550 tons for British buyers taken in two weeks at this figure. Other export orders are pending. Contracts for one merchant boat additional actually closed and for another practically so with Atlantic shipyards in the week have been responsible for some of the tonnage going to eastern mills. Bids are going in this week on 500 plates additional for Panama. Eastern Pennsylvania plate makers now are quoting the new second quarter contract price of 1.359c, Philadelphia, or 1.20c, Pittsburgh. One maker reports having renewed 10 to 12 contracts with regular customers at that figure. Whether the market, which had been around 1.10c on desirable new lots for quick delivery can be brought to the higher price has not yet been demonstrated by orders actually secured, and it would not be surprising if there were continued shading in this class of business.

### More Boat Contracts

New York, April 6.—After a lapse of several weeks, during which numerous negotiations have been carried forward, further contracts for merchant vessels have been placed with Atlantic coast yards. The Newport News Shipbuilding & Dry Dock Co. has booked a second boat for the Crowell & Thurlow Steamship Co., of Boston, which will be 375 feet in length and have a gross tonnage of 4,500. Another vessel contract practically is closed with another eastern yard. These awards increase to 26 the number of boats placed since the unusual activity in the shipbuilding first began in December. The latest boat to the Newport News yard will require 2,000 to 2,200 tons of steel, of which the plates, 1,200 to 1,400 tons, will be supplied by an eastern Pennsylvania mill and the shapes remaining by the Carnegie Steel Co. Miscellaneous plate orders have been of better volume. Railroad requirements continue light. On second quarter contracts, the usual price now is 1.369c, New York, or 1.20c, Pittsburgh, but this figure is subject to shading of $1 or more for prompt delivery.

### Prices Still Low

Cleveland, April 6.—The plate market along the lakes still shows irregularity and while the 1.05c price mentioned last week has disappeared, sales are made freely for early delivery at 1.10c, Pittsburgh.

### Not Well Pegged

Pittsburgh, April 6.—Plates are not so strong as steel bars. Car builders are playing little or no part in the market. Plate mill operations are light and irregular. Under existing conditions, it is not surprising that this product is weak and irregular. The Carnegie Steel Co., the Jones & Laughlin Steel Co., the Republic Iron & Steel Co. and other large makers of plates, shapes and bars are asking 1.20c for all three products for second quarter. Despite such efforts, plates continue somewhat soft. Whether material could be obtained at less than 1.15c is not known, but reports are heard that some mills are shading that figure.

### Plates Still Dull

Chicago, April 6.—Plates continue to be the dullest member of the finished steel trio, the only saving factor being the continuation of demand from tank makers who have taken considerable business in the Oklahoma and Texas oil fields. Lack of car buying restricts the output in that direction.

(*For complete prices see page* 742.)

# Coke Inquiry

### Comes From a Number of Blast Furnaces in Pittsburgh District

Pittsburgh, April 6.—Several blast furnace owners are quietly figuring in the market for coke. The Pittsburgh Steel Co. has not yet closed on its inquiry, so far as is known. Two eastern consumers are expected to award contracts at an early date. The output of the Connellsville regions is being gradually increased, but the market does not show a ripple. Prices are unchanged. The Connellsville *Courier*, for the week ending March 27, says production was 285,237 tons, an increase of 5,795 tons compared with the week before.

### Furnace Coke Sold

Cincinnati, April 6.—A sale of 40,000 tons of Pocahontas furnace coke has been made for delivery to a blast furnace in the southeast. The contract calls for shipment of from 6,000 to 7,000 tons a month for the next six months. This is the only transaction of importance that has occurred in this market for a long time. No foundries are in the market for yearly supplies, as they generally do not begin buying until some time in June. All other furnaces in this territory are well supplied with fuel.

# Warehouse Business Better

Chicago, April 6.—Warehouse men find demand for materials to go into the output of various manufacturing lines is greater, while structural materials are moving at somewhat slower rate, on account of prospective labor troubles, which promise to interfere with construction in this city. Prices remain unchanged on most lines, the only recent alteration being in cold rolled shafting, on which the discounts are 70 per cent off for carloads, 65 per cent off for less than carloads and 60 per cent off for shafting from stock.

# Steel Bars for Shrapnel

## Contracts for Large Tonnages Placed With Carnegie and Lackawanna Steel Companies

Cleveland, April 6.—J. C. Cromwell, of the Garrett-Cromwell Engineering Co., Cleveland, has placed orders for 45,000 metric tons of rounds with the Lackawanna Steel Co. and the same tonnage with the Carnegie Steel Co. These rounds are to be manufactured into shrapnel shells in France for the use of the French government. They are from 14 to 16 feet in length and it is understood the price was 1.60c, Pittsburgh. The Hydraulic Fressed Steel Co., Cleveland, has placed an order for 3,700 tons of rounds for the manufacture of shrapnel. These rounds are 3¼ inches in diameter and are cut to 5 inches in length. The price is understood to have been 2c per pound, Pittsburgh. The French government is anxious to place a considerably larger tonnage of orders for the manufacture of shrapnel. The steel bar market is firm at the base price of 1.20c, Pittsburgh, and the outlook for maintaining this price is favorable. The bar mill of the Upson Nut Co. now has enough orders on hand to run it well into May at full capacity. Bar iron mills in Cleveland are, however, running at only from 40 to 50 per cent of capacity and the demand is very light.

### War Swells Tonnage

Pittsburgh, April 6.—Steel bar makers continue to take large orders for representatives of warring nations. The Carnegie Steel Co. will roll 45,000 tons of shrapnel bars for the Garrett-Cromwell Engineering Co., Cleveland, which represents French manufacturers. Material will be furnished by the Duquesne Wks. of the Carnegie Co. Tentative inquiry for shrapnel and shell steel has come from car and locomotive builders, who are anxious to keep shops moderately busy. Steel bars are being held at 1.20c for this quarter, and that figure appears to represent the market. Bars have been more active than either plates or shapes, and bar prices have been steadier. Iron bars are now being quoted at a spread from 1.20c to 1.25c in this district.

### Sell Bars at New Price

Philadelphia, April 6.—Several small contracts for second quarter steel bars and some prompt orders have been taken in this territory by the mills at the new price of 1.359c, Philadelphia, or 1.20c, Pittsburgh, which went into effect April 1. While the market manifests firmness, the new price scarcely has been tested finally and this condition may obtain for some time, as most of the important buyers in this territory are covered to July 1, at 1.15c, Pittsburgh, or less, and new business coming up is not extensive. Since most of the jobbers of this district also are covered to July at 1.15c, it is not improbable that some of these bars may come on the market at concessions to compete with the mills' 1.20c quotation on current business. There have been no signs of any such shading to date, however. Specifications against contracts this week are lighter than last week. One order for 500 tons of bars for shrapnel has been taken by an eastern Pennsylvania mill from a nearby plant. Other shrapnel bars are in the market.

### Inquiring for 20,000 Tons

New York, April 6.—Large orders and inquiries for steel rounds for the making of shrapnel bars for the warring European countries are attracting much attention in the bar market. In addition to the large orders placed with the Carnegie and Lackawanna Steel companies, smaller orders have been placed in eastern Pennsylvania, including one of 500 tons. Recent prices have been around 2.25c at the mill. The American Locomotive Co., which has taken a large order for shrapnel, as reported in *The Iron Trade Review* last week, now is inquiring for 20,000 tons of rounds or forgings. There is a possibility of other round tonnages being taken, including the inquiry for 135,000 tons for the French government, previously mentioned in *The Iron Trade Review,* and still before makers. On ordinary soft steel bars, all the leading makers, since April 1, have been quoting 1.369c, New York, or 1.20c, Pittsburgh, and a little business has been done on this basis. Not much contract business now is open.

### Will Make Shrapnel

Cincinnati, April 6.—The Barney & Smith Car Co., Dayton, O., has closed a sub-contract with the Canadian Car & Foundry Co., for $1,000,000 worth of shrapnel, which will be shipped to Russia. This order will require about 7,000 tons of 3¼ inch open hearth steel bars, which has been purchased by the Barney & Smith Car Co. It is planned by Dayton manufacturers to finish these shrapnel shells among themselves, and so the contracts for machining, crating, and completely finishing will be sub-let to Dayton firms. It is stated that the Platt Iron Works, the Dayton Mfg. Co., and the Davis Sewing Machine Co. will all be given a share of the work. The wooden boxes in which these shells will be shipped to Russia, and in which they will be carried onto the field of battle will also be made by a Dayton concern. It is understood that the contract calls for the delivery of the shrapnel at an early date, and that a sudden conclusion of the war would not affect the validity of the contract being caried out by all parties concerned.

### Steel Bars Hesitate

Chicago, April 6.—New business in steel bars is slow to materialize. Railway equipment makers and agricultural implement makers do not appear to have booked business requiring any considerable quantity and, as these two lines of activity consume large tonnages of bars ordinarily, their comparative slackness results in marked dullness.

Large users for the most part are well covered on contracts for first half and unless they are forced to specify beyond their capacities will not be forced into the market to buy further than mid-year. Indications now are that present contracts for the most part will be sufficient to carry them through.

Bars are held at 1.39c, Chicago mill, for second quarter, without shading, and third quarter is announced as 1.44c, Chicago mill, although nothing is being done that far in the future.

### Iron Bars Are Steady

Chicago, April 6.—Conditions in the iron bar market remain practically stationary. Mills are receiving specifications in sufficient volume to keep operations up to a fairly satisfactory scale. New business is not large and mills are relying on specifications against orders already made. Quotations remain steady at 1.15c, Chicago mill, and recent competitions on inquiry have shown that makers are not inclined to shade this price to obtain business, believing that all the tonnage that is likely to come out can be obtained at the full price and shading would not bring out additional business.

### Quotations Vary

Philadelphia, April 6.—Some of the best-known brands of bar iron of standard quality among eastern Pennsylvania mills, are held at 1.15c, mill, or about 1.22c, Philadelphia. Other brands can be had at 1.10c, mill, how-

(*For complete prices see page 742.*)

ever, and on good tonnage for quick delivery this price has been shaded. The volume still is growing only slowly. Makers of iron skelp and muck bar are doing little and much puddling capacity is idle, especially at Pottstown.

### Rounds for Canada

Buffalo, April 6.—The Lackawanna Steel Co., it is reported, has booked an order aggregating 70,000 tons of large rounds, 3½ x 5 inches, for export, including 20,000 tons going into Canada. A total of 700 tons of reinforcing material figures in two Buffalo building contracts let to the Turner Construction Co., of this city. The price of 1.20c, base, established April 1, is being firmly held. Specifications on contracts expiring with the first quarter were heavy.

### Hoops, Bands and Shafting

Pittsburgh, April 6.—Steel bands are being quoted at 1.20c by more important makers, but that figure has not been severely tested. Hoops are quotable at 1.25c. Cold rolled shafting has reflected an improved tone this month. The advance in the price of steel bars tended to steady the shafting market. Shafting is listed at a spread from 69 per cent to 70 per cent off.

# Inquiry for Steel Scrap

## Continues to Come From Italy and Satisfactory Arrangements for Exporting May Be Made

Philadelphia, April 5.—Renewed interest is being given by dealers in this district in the continued inquiries for large blocks of heavy melting steel and other scrap grades for Italy. None of these matters heretofore has developed into business because of the unfavorable freight market, but there are intimations at present that the prospective buyers may arrange the transportation and accept material on an alongside-the-ship basis. If this proves to be the case, some sizable sales are probable. Because of possible export orders, a keener degree of interest in the market is being shown in the offering of 30,000 tons of old steel rails by the Pennsylvania railroad. Recently, it develops, this system sold 20,000 tons of similar material to a dealer at about $11 along its lines. The New Haven also has taken bids on a number of old locomotives which will embrace about 4,000 tons of miscellaneous scrap. The market of the past week in eastern Pennsylvania disclosed the expected reaction of heavy steel from the recent advance to $11.50, delivered. Now eastern consumers generally are offering only $11, delivered, and have taken small quantities at that figure. Brokers' bids are lower. At the same time, sellers are not inclined to take tonnages at the new figure. Other grades than steel are firm, though not active. Recent cuts in pig iron prices have unfavorably affected the heavy cast market, and lower prices are being offered by buyers.

### Market Still Active

Buffalo, April 6.—Old material dealers in the Buffalo district report a continued active market with the possible exception of turnings and borings. These lines have fallen behind the other commodities in the list, as users seem to be well stocked for early needs. Prices of turnings and borings are softer, but not sufficiently so to change the quoted schedules. Dealers generally are confident that the activity uncovered during the big pig iron drive will result in a demand for scrap and a consequent advance in prices in the near future.

### Melting Steel Strong

Cincinnati, April 6.—Heavy melting steel is strong, and is showing a tendency to fluctuate, but the quotation of from $9 to $9.50 per gross ton is unchanged. Rolling mills are now using a large tonnage of this material, but they have such a large stock on hand, and on old contracts, that it will require considerable time before new supplies will be needed. Jobbing foundries are using large amounts of No. 1 cast, No. 1 busheling, machine shop turnings and cast borings.

### Scrap Prices Decline

Chicago, April 6.—Continued stagnation in iron and steel scrap has brought about another decline in quotations, almost all items now being 25 to 50 cents per ton lower than last week. Large users are taking small bargain tonnages as the market goes down, but are not in a position to take large tonnages. Practically all the larger sales made some weeks ago have been covered by brokers and all dealings now are at present market levels.

With the market in its present condition, railroads have lists aggregating almost 17,000 tons before the trade, which is a further weakening factor. Just what will follow absorption of this tonnage remains to be seen. The Baltimore & Ohio has issued a list containing practically 9,500 tons, of which 2,000 tons are No. 1 steel rails, 1,100 tons of pressed steel, 1,000 tons of wheels, 900 tons of No. 2 wrought and 600 tons of No. 1 wrought.

The Santa Fe railway offers 2,740 tons, the Wabash 1,600 tons, the Chicago & Alton 1,000 tons, the Soo line 570 tons and Geo. W. Jennings 900 tons. Included in the Wabash list are 660 tons of long steel rails and in the Chicago & Alton list are 350 tons of the same sort of rails, while the Jennings list contains 500 tons of car wheels.

### Quiet in New York

New York, April 6.—Small interest now is being shown by consumers of scrap in territory drawing upon this center and the quieter condition of the market noted last week has continued. Heavy melting steel for eastern Pennsylvania delivery has been sold here at lower prices and $9, New York, represents about the top of the market. While there is not much new demand from consumers, only a limited amount of scrap also is being offered by the yards and producers, so that dealers and brokers encounter some trouble in covering old business. The Seaboard Air Line recently took bids on about 4,000 tons of miscellaneous scrap, including 2,000 tons of steel rails and 1,400 tons of car wheels. The Norfolk & Western offered 3,000 to 4,000 tons, including 1,000 tons of steel rails at Roanoke.

### Loses Ground

Pittsburgh, April 6.—The iron and steel scrap market is not so strong as it was a month ago. Prices have not changed to any great extent, but it is apparent that the market no longer is controlled entirely by dealers and jobbers. Heavy melting steel is not commanding above $12 except in special cases, and other grades are correspondingly weak.

### Weak at St. Louis.

St. Louis April 6.—The scrap market is considerably weaker and prices have declined from 25 cents to 50 cents on nearly all grades. The large quantities of scrap recently unloaded on the market by the railroads, and the fact that large users of melting steel decline to make further purchases at present have tended to weaken the market.

Railroad lists out this week are: Missouri Pacific, 1,500 tons, of which 500 tons is No. 1 railroad wrought; Chicago & Alton, 950 tons, of which

(*For complete prices see page* 742.)

350 tons is long length steel rails; Vandalia, 500 tons; Kansas City Southern, 250 tons; Baltimore & Ohio, 9,500 tons, of which 2,000 tons is long length steel rails and 600 tons cast iron car wheels; New York Central, open list, which closes April 8.

### Backward at Cleveland

Cleveland, April 7.—Coincident with the continued weakness of the pig iron market in some centers, the iron and steel scrap market is backward. Prices are not materially lower, but mill demand is light and an excess of old material seems to be on the market. Railroad lists are unusually heavy this month. The New York Central railroad list closes here on Thursday. Dealers are commenting upon the unusual circumstance of a rising stock market and a receding scrap market. In the past, movements of the two generally have been nearly parallel.

# Hold a Rump Convention

## And Plan to Secede From Amalgamated Association—Improved Conditions in Sheet and Tin Plate Mills

Pittsburgh, April 6.—Insurgent members of the Amalgamated Association in the Wheeling district, laid initial plans for the formation of "The United Iron and Steel Workers of America," at a rump convention Sunday. When a motion to pull away from the parent organization was introduced, members of the sub-lodge at the Wheeling plant of the Whitaker-Glessner Co. arose in a body and left the hall. The Wheeling mill will resume operations tomorrow. Men from other lodges in the Wheeling district are said to have approved the movement to form a new society, but officers of the Amalgamated Association who have stamped out several similar organizations in the last few years do not regard the rival association at all seriously. Trouble in the Wheeling district is said to be due to dissatisfaction of the revised wage scale recently accepted by the association. Reports are heard that several members of the Industrial Workers of the World quietly participated in plans to form the new association.

Generally speaking, the sheet market is improving. Automobile builders are specifying briskly and many of them are placing orders for additional material. Shipments of sheets this year to automobile makers will exceed those of any previous season by a broad margin. No. 28 gage galvanized sheets are quoted at 3.40c; No. 28 gage black at 1.80c and No. 10 blue annealed at 1.30c.

Tin plate mills are operating at capacity. Domestic demand is heavy, and inquiries for foreign shipment are numerous. Material is being held at 3.35c, but that figure can be shaded $2 or $3 a tons, buyers say.

### Eastern Business Spasmodic

Philadelphia, April 5.—Orders with eastern Pennsylvania sheet makers continue of an irregular character. During the past week, the tonnage improved, both specifications and new business being larger and mill operations were better. The situation has been such, however, that there is no certainty that the increased volume will be maintained. Prices remain 1.459c to 1.509c, Philadelphia, or 1.30c to 1.35c, Pittsburgh, for No. 10 gage blue annealed.

### Sheet Sales Good

Cincinnati, April 6.—Sales of sheets continue good considering conditions. Mills will not sell except for prompt delivery, and quotations, especially those on galvanized sheets, are subject to change from day to day. The American Rolling Mill Co., Middletown, O., has received a large order for forgings, which will keep it busy for several months. The Newport Rolling Mill Co., Newport, Ky., is remodeling its galvanizing plant at an expenditure of $40,000. Prices are unchanged but strong. Black sheets No. 28 gage are quoted at from 1.85c to 1.90c, and galvanized sheets No. 28 gage at from 3.40c to 3.45c, all Pittsburgh basis.

### Sheet Market Slow

Chicago, April 6.—Makers of galvanized sheets in the west are quoting 3.59c, Chicago mill, on galvanized, but are not anxious for business and are taking it for the most part only in cases where regular customers are in need or where an order is taken for other varieties and includes a small quantity of galvanized. Prices of spelter remain too high to give profit on galvanized and fortunately buyers are not particularly anxious to take on tonnages at present prices, in view of the fact that a contract for sheets at present is a real contract, allowing no cancellation and under which the buyer must take the tonnage at the price specified.

No change has taken place in the situation as to black and blue annealed sheets and the former are quoted at 1.94c to 1.99c, Chicago mill, for No. 28 gage.

(*For complete prices see page* 742.)

# Steel Exports

### Include Ingot Crop Ends for Italy and Billets for England

Philadelphia, April 5.—Further important orders for semi-finished material for export have been placed with eastern makers and additional tonnage is in the market.

An eastern producer which recently took an order for 7,500 tons of ingot crop ends for Italy has sold 10,000 tons additional for the same destination. The second order is understood to have been taken at an advance of $1 to $2 a ton over the former, and to have been done at approximately $14, tidewater. The material probably will be shipped from a tidewater plant. An eastern Pennsylvania works has booked 1,000 tons of open hearth billets for shipment to the British Isles at a price of about $21, New York, equivalent to approximately $19.50 at the seller's mill, and to about $19.15, Pittsburgh. An inquiry for 1,000 tons of sheet bars for export remains open. With the foreign orders and an increased demand from domestic users, eastern Pennsylvania billet mills are running better. Much of the demand for billets in this territory continues to come from the forging shops, which are producing forgings for machine tools and for shrapnel. Prices are about $22.06, Philadelphia, or $19.50, Pittsburgh, for rolling billets, and $3 to $4 higher for forging steel.

### Billets and Sheet Bars

Pittsburgh, April 6.—Difference of opinion regarding the status of the semi-finished steel market continues to be expressed by buyers and sellers. The latter claim material for prompt delivery is not obtainable at published prices. On the other hand consumers say offers, even more attractive than minimum quotations have been made by some interests. The market shows no snap, and it is difficult to get a line on quotations.

Muck bar is nominally quoted at $27, Pittsburgh. Wire rods are listed at from $25 to $26, Pittsburgh.

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M. E. Lazarus, Cleveland, for the past ten years with the Fertel Co., Cleveland, has severed his connections with that concern and is now doing business under the name of M. E. Lazarus Co., with offices at 824 Rockefeller building. Mr. Lazarus has had a wide experience in the scrap line and is well known to the trade.

# Steel for Grade Crossings

## In Elevation Work in Philadelphia Will Be a Large Tonnage—Some Sales at 1.20c, Pittsburgh

Philadelphia, April 6. — More talk now is being heard in the structural market regarding the large tonnages for grade elevation work which the city of Philadelphia in conjunction with the Pennsylvania and Reading railroads will buy to carry out plans now well advanced. In some quarters, it is believed part of this tonnage at least is likely to come out soon. The quantity of fabricated work that will be required still is problematical, but it is expected to reach a heavy total. The work has been in view for several years and while the drawings have been practically completed, some essential details have remained to be perfected. No important changes have developed in the structural steel situation in this territory. The tonnage still is spasmodic, but the mills are maintaining better outputs. Miscellaneous orders are improving. Eastern Pennsylvania shape makers continue to quote 1.20c, Pittsburgh, or 1.359c, Philadelphia, for second quarter contracts, and this figure also is being named on prompt business. On the latter, however, where the tonnage is desirable some makers still will shade $1 at least and probably more on the very large quantities.

### Many Small Projects

New York, April 6.—Large numbers of small inquiries have presented one of the noticeable features of the structural steel market in this territory. Last week, the American Bridge Co. booked about 125 different orders of this character, the aggregate weight of which only slightly exceeded 1,000 tons. This fabricator has been averaging 90 to 100 of these small orders weekly for several months past. Trouble in financing building operations in this city is holding back a number of projects for which plans have been prepared. The conservative manner in which risks are being accepted by the banks and other financing agencies is having considerable effect on the volume of new work which now is being offered. Extensions of plants for the manufacture of munitions of war continue to bring out a considerable requirement for structural steel. In these cases, quickness of delivery is the prime requirement and prices are being subordinated to that. It is estimated that the contracts for new construction placed in recent months at Ilion, N. Y., Bridgeport, Conn., and New Haven by the Remington, Winchester and affiliated companies, have called for about 10,000 tons of steel. Considerable tonnage still is in the market, particularly for the new plant of the Bridgeport Arms Co., which is being rushed to completion in record-breaking time. In this city, two subway contracts, calling for 8,000 tons or more, are up for early figures. Plain shape prices, which were advanced to 1.369c, New York, or 1.20c, Pittsburgh, on contracts, still show some shading on specific lots, according to tonnage and desirability. The mills endeavor not to go below 1.15c, Pittsburgh, under such circumstances.

### Shapes May Reflect Strength

Pittsburgh, April 6. — Structural shapes are slightly stronger than plates and slightly weaker than steel bars. Shapes are being held at 1.20c by leading makers, who regard that figure as representative for second quarter delivery. The market, however, is uncertain. No large structural contracts have been placed in this district this week.

### More Inquiry

Buffalo, April 6.—Mills and agencies of the Buffalo district report a noticeable increase in the volume of inquiries for structural. Fabricators finding their stocks short and the early spring demand heavier than was anticipated are now in the market for material for second quarter deliveries, securing their needs at the price of 1.20c, base, which went into effect on April 1.

### Sale at 1.20c

Cleveland, April 6.—A sale of 500 tons of shapes has been made at 1.20c, Pittsburgh. Numerous jobs involving small tonnages are being figured on, but no large projects are pending.

### Shapes in Small Lots

Chicago, April 6.—Fabricators find themselves figuring on an unusual number of projects, although almost all are for small tonnages, scarcely an item being over 500 tons. The aggregate of the large number probably runs into considerable steel, but uncertainties of the labor situation are somewhat of a drag and prevent contracts being closed in many instances. The principal item figuring in the structural steel market in the west during the past week is material for the benzol recovery plant of the Indiana Steel Co., at Gary, which aggregates over 2,300 tons. Other items are for small lots.

Structurals are held firm at 1.39c, Chicago, with third quarter business quoted at 1.44c, but nothing is being done so early.

(*For complete prices see page 742.*)

### CONTRACTS AWARDED.

Indiana Steel Co., benzol recovery plant, Gary, Ind., 1,694 tons, to John Mohr & Sons, Chicago.

Indiana Steel Co., buildings for benzol recovery plant, Gary, Ind., 627 tons, to North Works, Illinois Steel Co.

Addition to Mercy hospital, Chicago, 344 tons, to Hansell Elcock.

Whatcom county, Wash., 380 foot P. C. span, steel joist and lattice railing, 253 tons, to Toledo Bridge & Crane Co.

Oliver Iron Mining Co., shaft sets and stuttles for No. 2 shaft, Sibley mine, Ely, Minn., 208 tons, to American Bridge Co.

Ambrose-Durdsall County, Ore., two 150-foot spans, two 160-foot spans and three sets tubular piers, 167 tons, to Coast Bridge Co.

Office building for Vincent Astor at Vesey street and Broadway, New York City, 1,600 tons; general contract taken by Marc Eidlitz & Son; steel placed with Post & McCord and fabrication will be done by American Bridge Co.

Two additional sections of plant for Bridgeport Arms Co., Bridgeport, Conn., 1,400 tons, closed with unnamed shop.

Power house for Ilion, N. Y., plant of Remington Arms Co., 200 to 300 tons, awarded Lackawanna Bridge Co.

Power house, Winchester Repeating Arms Co., New Haven, 200 to 300 tons, awarded Berlin Construction Co.

Apartment at Seventeenth and Walnut streets, Philadelphia, 600 tons, awarded Belmont Iron Works.

Addition to University Hall, Columbia University, New York, 300 tons, awarded Hinkle Iron Works.

Palmer apartment, W. Seventy-sixth street, New York City, 400 tons, awarded Harris H. Ures Iron Works.

Extension to the plant of Reid Ice Cream Co., Brooklyn, 200 tons, awarded to National Bridge Co.

W. H. Walker & Co., Buffalo, wholesale shoe warehouse, 11 stories, 350 tons reinforcing material, contract to Turner Construction Co., Buffalo.

Buffalo Meter Co., Buffalo, new plant, 4 stories, 350 tons reinforcing material, contract to Turner Construction Co.

### CONTRACTS PENDING.

Eyebars for the Red River Bridge for Vicksburg, Shreveport & Pacific Ry., Shreveport, La., 230 tons.

Loft building for Frederick Ayer, Thirty-third street and Broadway, New York City, 1,000 tons, contract pending.

Bridge work for New York Central railroad, 300 tons, bids entered.

Building for Eagle Pencil Co., East Thirteenth street, New York City, 1,000 tons, bids entered.

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The Union Spring & Mfg. Co., Oliver building, Pittsburgh, now occupies a suite in the First National Bank building, that city.

# Liberal Ferro Shipments

## Will Be Made From England During Next Thirty Days and Will Greatly Relieve the Situation

New York, April 6.—A liberal tonnage of fero-manganese, to be applied against recently "married" contracts of consumers in this country will go forward from England during the next 30 days, according to the quantities now being loaded or for which transportation has been arranged. The quantities to be shipped, the names of the vessels and other final details, are given in fresh cables being received by the agents in this country. These advices indicate that each direct representative of English makers will receive from 1,000 to 1,500 tons or more, under these initial shipments, making probably not less than 7,000 to 7,500 tons in all to arrive by the middle of May.

While this tonnage greatly will relieve the situation of any acute features, it is pointed out that it will represent less than a month's normal consumption of merchant ferro-manganese in this country. Whether these initial shipments will be followed steadily by others, is not yet certain, but the belief is entertained among sellers that barring important complications, the shipping movement will be maintained. Some of the boats bringing in ferro-manganese are scheduled to sail from England April 10 and will arrive about May 1. Others will leave at different dates and it is thought some tonnage now may be afloat. Among the boats that will carry the shipments will be the Appenine, Larchmore, Lord Sefton and others.

That the English government proposes to surround the incoming ferro-manganese with every safeguard to prevent it or the steel made from it landing in the hands of its enemies, is shown by its appointment of a New York firm of accountants, Marwick, Mitchell, Peet & Co., 79 Wall street, as its representatives, to supervise the distribution of the incoming supply. This firm will receive the shipments and then release them to customers through the various sellers after the users have formally subscribed to the restrictions specified. In this connection, a new written guarantee is to be given by the consumers to the New York representatives of the English government, which pledges that the ferro-manganese will be used in their own plants; that none of it will be re-exported from this country; that none of the steel made from it will be shipped to Europe, other than the United Kingdom, France or Russia, and that no steel made from it will be sold to any person in the United States, without the latter giving a written guarantee that this material will not be exported from this country. This guarantee is of the standard form which the English government has adopted for all ferro-alloys and ores.

There is very little new buying of ferro-manganese at the official quotation of $78, seaboard, for carloads, but a few small transactions have been done at that figure. There has been some talk of lower prices on ground ferro-manganese because of the more settled outlook for deliveries of new metal, but leading producers state their requirements remain unchanged at 7 to 7½ cents per pound at the plant. Continued foreign demand for spiegeleisen is pending and further business turns upon the question of obtaining favorable freights. Some foreign inquiry for fluorspar also is current.

### Reflects More Activity

Pittsburgh, April 6.—Ferro-alloy dealers at this center have experienced moderately increased demand for some grades of material, but the market still shows a tendency to drag. Ferro-manganese users do not appear concerned about future supplies, the resumption of shipments practically assuring them that the situation will improve gradually. Lower grades of ferro-manganese are rather quiet, and spiegel shows no snap. Spiegel is being offered at $27, furnace, or $1 a ton under the nominal price previously prevailing. Demand for ferro-molybdenum and ferro-vanadium is rather limited. Fifty per cent and lower grades of ferro-silicon are more active than previously, but prices are unchanged.

## New Boiler Tube Card

Pittsburgh, April 6.—Under date of April 1, the National Tube Co. issued a card on steel boiler tubes in less than carload lots to succeed the card of May 1, 1914, on carload lots. The May 1 card listed 3½ to 4½ inches at 72 per cent off, but that price long since had been regarded obsolete. *The Iron Trade Review* listed steel boiler tubes at 74 per cent, or one point less than the discount named on April 1. Demand for iron and steel boiler tubes is light. Orders for 30 miles of 8-inch for western shipment; 20 miles of 6-inch for western shipment; 23 miles of 8-inch for Canadian shipment and 90 miles of 6-inch steel line pipe for western shipment have been placed in this district recently.

(*For complete prices see page* 742.)

## Wire Mills

### Are Busy and Prices Are Being Well Maintained

Pittsburgh, April 6.—Wire mills continue to operate at practically maximum capacity. Several attractive orders for export to foreign countries have been placed this week, but detailed particulars are not announced. The domestic situation is not satisfactory, but shows signs of improvement. Advanced galvanizing extras are being quoted by some makers.

### Prices Well Maintained

Cleveland, April 6.—The strongest feature of the wire market at present is the fact that prices are being unusually well maintained. Specifications are fair. The high price of spelter is causing some anxiety of makers of galvanized wire and high prices are being paid. Leading makers are buying in small quantities to meet current requirements.

## Ore Movement

### From Docks to Furnaces is Not Very Rapid

Cleveland, April 6.—Some lake furnaces will need ore about the time of the opening of navigation, but they are not yet showing any anxiety to cover for their requirements.

The March movement of Lake Superior iron ore from lower lake docks to furnaces was 648,848 tons, compared with 820,741 tons in March, 1914, 301,629 tons in February, 1915, and 249,123 tons in January, 1915. The ore on dock April 1 amounted to 6,861,840 tons, compared with 7,155,674 tons on dock April 1, 1914. The distribution of the ore on dock April 1, 1915, was as follows:

| Port. | Gross tons. |
|---|---|
| Buffalo | 183,805 |
| Erie | 453,210 |
| Conneaut | 819,708 |
| Ashtabula | 2,227,981 |
| Fairport | 293,561 |
| Cleveland | 1,703,125 |
| Lorain | 430,263 |
| Huron | 462,796 |
| Sandusky | 2,471 |
| Toledo | 284,920 |
| Total | 6,861,840 |

# Cast Pipe

**Demand Moderate—Prices Are Tending Upward**

New York, April 6.—Eastern municipalities have inquired less freely the past week for cast iron pipe, but a fair tonnage was closed on former inquiries. At present, the public requirements in the market are small. Demand by private buyers holds up well. The tendency in asking prices continues upward, but the actual advance obtained on competitive business, is slight. For the 6 and 8-inch the range of the market seems to be about $21.50 to $22, tidewater, with some makers asking even more. Indefiniteness characterizes a recent inquiry for 5 to 6 miles of large pipe or about 10,000 tons for Canadian shipment, upon which eastern foundries have been asked to bid. No destination is mentioned for this pipe; in one case, 36-inch is specified and in another, 48-inch. Because of the uncertainty regarding details, makers have small hopes of this inquiry bringing business. It has been expected that a large tonnage for the Welland canal was about to reach the market and the lot now out may represent that requirement. An inquiry for 450 tons of 12's for Argentine, also is pending. The Donaldson Iron Works is low on 270 tons for Syracuse, N. Y., at $21.25 for the 10's and 12's; $22.16 for the 6's and 8's, and $23 for the 4's, and also on 1,122 tons for Philadelphia at $20.80 for the 6's, 8's and 10's and $19.90 for the 12's and 20's, both class C, and at $21.84 for the 10s and $20.96 for the 12's and 16's, both class B. R. B. Wood & Co. took 116 tons of 6's to 14's for Everett, Mass., at $21.14, and 465 tons of 6's and 8's for North Andover, Mass., at $21.69, and is low on 181 tons of 6's and 8's for Brockton, Mass., at $21.59. The Lynchburg Foundry Co. took 638 tons for Richmond, Va., at $20 for the 12's to 20's; $22.35 for the 6's to 10's, and $24.35 for the 4's. The United States Cast Iron Pipe & Foundry Co. is low for the year's requirements for Lancaster, Pa. Durham, N. C., takes bids April 21 on 4,300 tons of 6's to 24's; Harrison, Ark., is out for 1,400 tons of 10's to 12's, and Barker, N. Y., 437 tons of 4's to 10's, which is a contractor's letting.

**Cast Pipe Prices Steady**

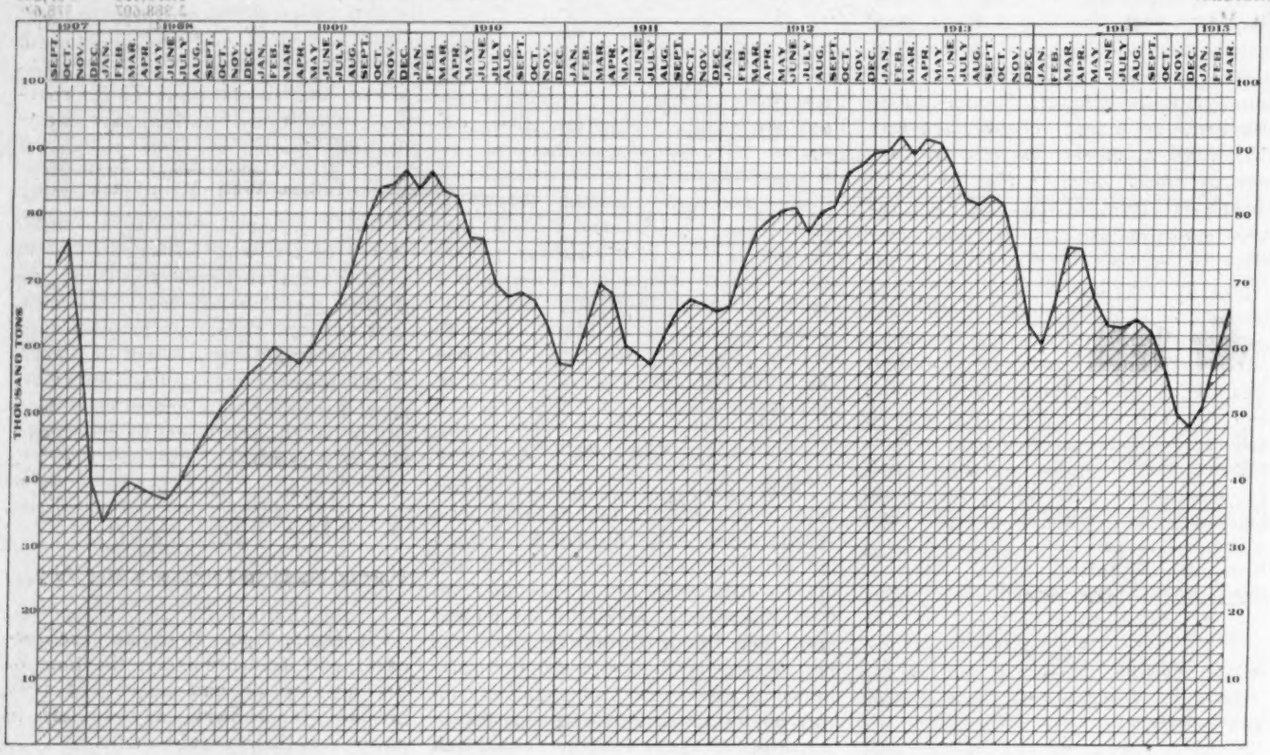
Chicago, April 6.—Slowness which has characterized the market for cast iron pipe for a fortnight still continues and municipal tonnages are small or absent. No advance in price has been made in the west, although in the east some changes upward have been made.

The United States Cast Iron Pipe & Foundry Co., is low bidder on 700 tons of 36-inch pipe at Cincinnati on which an award has not been made. Bids were opened at Manitowoc, Wis., Monday, on 100 tons; in Jackson, Mich., Tuesday, on 250 tons, and at Sandusky, April 3, on 550 tons, while McCune, Kan., will open bids Thursday on 200 tons.

## Approved Stock Issue

Youngstown, O., April 6. (By wire.)—Stockholders of the Youngstown Sheet & Tube Co. met at the general offices here Tuesday forenoon and approved the preferred stock issue of $5,000,000 recommended by the directors during the first part of last month, raising the total capitalization from $25,000,000 to $30,000,000. The $5,000,000 stock issue was placed on the market in Cleveland and Youngstown about 10 days ago.

The proceeds from the sale of this new stock will be used in the erection of 200 by-product coke ovens and for addition of finishing mills to have a total production of 25,000 tons. Work on the ovens is to commence within 30 days, although the formal contract as yet has not been closed.




AVERAGE DAILY PRODUCTION OF COKE AND ANTHRACITE PIG IRON

## Makes a Fine Record

The 11-inch bar mill of the Upson Nut Co., Cleveland, of which Willard Fuller is works manager, made a remarkable record April 6, turning out a total of 705 tons for the 24 hours. On the night turn, there were four changes of sizes and 248.6 tons were rolled. On the day turn of 11½ hours, the production was 456.4 tons of 0.851-inch rounds.

# Pig Iron Production Shows Big Gain

## March Output Exceeds December by Over Half Million Tons—More Stacks in Blast

THE production of coke and anthracite pig iron in March, showed the largest gain of any month since the improvement began in January. The total output last month was 2,046,280 tons, compared with 1,666,592 tons in February, a gain of 379,688 tons. Compared with December, 1914, which marked the lowest point in pig iron production since September, 1908, there was an increase of 550,000 tons. The output in March was the largest since May, 1914.

The number of stacks in blast showed a net gain of 11, there being 190 active on March 31, compared with 179 in blast on the last day of February. Nine steel works or non-merchant furnaces were relighted last month and two were blown out, a net gain of seven. Five merchant furnaces were blown in and one put out of blast, a net gain of four.

**AVERAGE DAILY PRODUCTION.**

| | 1915. | 1914. | 1913. | 1912. |
|---|---|---|---|---|
| Jan. ... | 51,323 | 60,624 | 89,929 | 66,220 |
| Feb. ... | 59,521 | 67,450 | 92,095 | 72,372 |
| Mar. ... | 66,009 | 75,534 | 89,123 | 77,791 |
| Apr. ... | ..... | 75,383 | 91,812 | 79,254 |
| May ... | ..... | 67,646 | 90,865 | 80,753 |
| June ... | ..... | 63,486 | 87,229 | 81,125 |
| July ... | ..... | 63,075 | 82,525 | 77,502 |
| Aug. ... | ..... | 64,403 | 81,839 | 80,650 |
| Sep. ... | ..... | 62,757 | 83,137 | 81,482 |
| Oct. ... | ..... | 57,007 | 81,933 | 86,569 |
| Nov. ... | ..... | 50,042 | 74,322 | 87,985 |
| Dec. ... | ..... | 48,236 | 63,746 | 89,590 |
| Average | 58,932 | 62,934 | 83,980 | 80,124 |

The daily average production in March was 66,009 tons, against 59,521 tons in February, a gain of 6,488 tons. The steel works furnaces were responsible for practically all of this increase. The average daily production of non-merchant iron in March was 49,457 tons, compared with 43,424 tons in February, a gain of 6,033 tons. The merchant furnaces averaged 16,139 tons daily during March, against 15,558 tons in February, a gain of 581 tons.

The total production of non-merchant iron in March was 1,533,170 tons against 1,215,860 tons in February, a gain of 317,310 tons. The merchant furnaces produced 500,325 tons in March, against 435,615 tons in February, a gain of 64,712 tons.

The production of ferro in March was 6.626 tons, against 7,515 tons in February, a loss of 889 tons. Spiegel production in March was 6,159 tons, against 7,604 tons in February, a loss of 1,445 tons.

The merchant furnaces blown in were: Tuscaloosa, Central Iron & Coal Co., March 24; Anna, Struthers Furnace Co., March 14; Hokendauqua No. 1, Thomas Iron Co., March 11; Earlston, Joseph E. Thropp, March 7, and Cranberry, Cranberry Furnace Co. The Rockdale, Tenn., furnace of J. J. Gray Jr., was blown out March 17.

The non-merchant furnaces blown in were: South Works No. 6, Illinois Steel Co., March 10; Gary No. 11, Indiana Steel Co., March 20; Lackawanna No. 4, Lackawanna Steel Co., March 21; one Ohio, March 10, and one Mingo, March 9, Carnegie Steel Co.; "A", Youngstown Sheet & Tube Co., March 15; Soho, Jones & Laughlin Steel Co.; Atlantic, Republic Iron & Steel Co., March 8, and one Swede, Alan Wood Iron & Steel Co., March 9. One Donora, American Steel & Wire Co., and one Eliza, Jones & Laughlin Steel Co., were blown out.

The La Follette, Tenn., furnace of the La Follette Iron Co., which was banked Feb. 14, resumed March 27. Belfont furnace, of the Belfont Iron Works Co., Ironton, O., was scheduled to go out this week.

F. F. Amsden is superintendent of the Earlston furnace, of Joseph E. Thropp, Everett, Pa., which resumed during March.

**MONTHLY PRODUCTION.**

| | 1915. | 1914. | 1913. |
|---|---|---|---|
| January .... | 1,591,024 | 1,879,336 | 2,787,800 |
| February ... | 1,666,592 | 1,888,607 | 2,578,670 |
| March .... | 2,046,280 | 2,341,551 | 2,762,823 |
| April ..... | ..... | 2,261,501 | 2,754,353 |
| May ..... | ..... | 2,097,019 | 2,816,825 |
| June ..... | ..... | 1,904,566 | 2,616,883 |
| Total 1st half. | ..... | 12,372,580 | 16,317,354 |
| July ..... | ..... | 1,955,324 | 2,558,275 |
| August .... | ..... | 1,996,483 | 2,537,018 |
| September . | ..... | 1,882,718 | 2,494,098 |
| October .... | ..... | 1,767,227 | 2,539,924 |
| November .. | ..... | 1,501,269 | 2,229,960 |
| December .. | ..... | 1,495,325 | 1,976,138 |
| Total 2d half. | ..... | 10,598,346 | 14,335,413 |
| Grand total. | 5,303,896 | 22,970,926 | 30,652,767 |

The active Coatesville, Pa., furnace of the Worth Bros. Co. produced 14,829 tons in March, a record tonnage for this furnace.

The Ivanhoe Furnace Co., Ivanhoe, Va., is installing a concentrating mill for handling the zinc ores, which it is developing.

**MARCH PIG IRON**

| States. | No. of stacks. | No. in blast last day of month. Mar. | Feb. | Total tonnage made. Merchant. | Non-Merchant. | ——Totals.—— Mar. | Feb. |
|---|---|---|---|---|---|---|---|
| Pennsylvania ..... | 157 | 81 | 78 | 124,437 | 763,849 | 888,286 | 736,592 |
| Ohio ..... | 73 | 43 | 39 | 91,550 | 417,393 | 508,943 | 395,857 |
| Alabama ..... | 45 | 15 | 14 | 110,495 | 26,468 | 136,963 | 126,297 |
| Virginia ..... | 22 | 4 | 4 | 17,050 | | 17,050 | 15,293 |
| New York ..... | 26 | 14 | 13 | 80,546 | 55,450 | 135,996 | 112,881 |
| New Jersey ..... | 6 | 1 | 1 | 6,738 | | 6,738 | 6,096 |
| Illinois ..... | 26 | 9 | 8 | 11,264 | 118,661 | 129,925 | 92,238 |
| Colorado ..... | 6 | 2 | 2 | | | | |
| Indiana ..... | 10 | 8 | 7 | | | | |
| Maryland ..... | 4 | 2 | 2 | | | | |
| Wisconsin ..... | 6 | 2 | 2 | 15,040 | 144,376 | 159,416 | 121,837 |
| Kentucky ..... | 7 | 1 | 1 | | | | |
| West Virginia ..... | 4 | 1 | 1 | | | | |
| Tennessee ..... | 18 | 4 | 4 | | | | |
| Washington ..... | 1 | 0 | 0 | 18,927 | 6,973 | 25,900 | 22,534 |
| Georgia ..... | 2 | 0 | 0 | | | | |
| Texas ..... | 3 | 0 | 0 | | | | |
| Minnesota ..... | 1 | 1 | 1 | | | | |
| Michigan ..... | 3 | 2 | 2 | | | | |
| Missouri ..... | 1 | 0 | 0 | 24,278 | | 24,278 | 21,848 |
| Spiegel—All states.. | | | | | | 6,159 | 7,604 |
| Ferro—All states... | | | | | | 6,626 | 7,515 |
| Totals ..... | 421 | 190 | 179 | 500,325 | 1,533,170 | 2,046,280 | 1,666,592 |

## Contract for Benzol Plant

Chicago, April 5.—Operations have been started on a benzol recovery plant in connection with the by-product coke ovens of the Indiana Steel Co., at Gary, Ind. Contracts have been let to John Mohr & Sons for 1,700 tons of plate work and the north works of the Illinois Steel Co. will furnish structural material for the buildings, as speed is desired in erection.

The plant will be of sufficient capacity to extract all the benzol from the gas from 560 ovens and construction will be pushed in order that it may be in operation as soon as possible. No prophecy is made how soon it may be completed, but certainly within the present year.

This plant is part of the original plant when the by-product ovens were constructed and will be situated north of the present by-product plant at the east end of the Gary works.

The offices of W. J. Rainey are now located in the Vanderbilt Concourse building, 52 Vanderbilt avenue, New York City.

# Spelter Sales

**Make Fairly Large Total—Lead Market is Strong**

New York, April 6.—Fairly large sales of prime western spelter have been made recently to galvanizers at around 8.75c to 9c, St. Louis, for April, and 8.50c for May. Most of the April metal was sold at the inside price, but there were a few sales at the outside figure. In addition there was a lively demand last week for spelter for export, but this involved chiefly brass special grade. At present the market is quiet, both foreign and domestic demand having fallen off almost completely. In London, the market declined 15s today, closing at £42 5s, but this did not have an influence in this market. In fact, the situation is quite firm and it is doubtful whether sellers now could be found at less than 9.25c, St. Louis, for spot; 9c, St. Louis, for April; 8.75c, St. Louis, for May, and 8.50c, St. Louis, for June and July. Domestic consumers appear to have good-sized May requirements still to close on, and much April metal remains to be bought. Producers, as previously reported, are quite sold up for these two months. A feature of the situation is the lack of demand for futures.

The lead market is strong and producers are well sold up, by reason of the big foreign demand recently. If this foreign demand keeps up, some producers say, the behavior of the lead market probably will duplicate, to some extent at least, that of the spelter market. The leading producer now is asking 4.20c, New York, and independent producers are asking higher than the St. Louis parity. Most independents will not sell less than 4.15c, St. Louis, while others hold for 4.17½c.

Spot stocks of antimony have been still further diminished by reason of further export sales. Our only source of supply now is the far east, since Spain has declared an embargo on exports. Spot Chinese and Japanese are held at 22c, duty paid, while on April and May shipment from the far east 20c, in bond, is asked. Cookson's has sold as high as 33c and only a few casks are left. United States is held at 26 to 28c, HH French at 26c and Spanish at 25c, duty paid.

The copper market is strong by reason of the large war demand recently, both from abroad and from domestic manufacturers busy on war contracts. Electrolytic is held at 16c, delivered 30 days, although some sellers offer small prompt tonnages as low as 15.75c. Casting copper is held at 15.50c to 15.75c, delivered 30 days, depending on the grade. Best brands of lake copper are held at about 16.75c, cash; good ordinary brands at 16c, cash, and arsenical brands at 15.75c, cash.

Demand for aluminum and aluminum products is brisk. On ingot aluminum for spot shipment the price is about 19c, Niagara Falls; the domestic producer is about the only seller of spot. The importer of British aluminum asks 19.50c, duty paid, on future deliveries. Some imported aluminum was sold last week at 18.50c, Chicago, but no more is available at this price.

The price of tin, by reason of the scarcity of supplies, due to the poor arrivals during March, continues high. Spot is quoted nominally today at 48c. There are scarcely any sellers, however. On the other hand, consumers recently have been showing almost no interest whatever, either in spot or futures. Arrivals will be more plentiful in April but prices are expected to continue higher than the London parity for at least a week or two, since most of the tin afloat has been disposed of and will not be offered for sale in the market. The trade generally believes, however, that after the present scarcity is relieved, supplies will be large and prices will decline.

## Steel Rails for South Africa

New York, April 7. (By wire.)—The Dominion Iron & Steel Co. is reported to have taken 30,000 tons of rails for South Africa. Other rails for South Africa are pending. The Southern Railway has placed 3,700 tons additional with the Tennessee company. Other rail orders are small. A bridge for the New York, Chicago & St. Louis, Seventy-ninth street, Chicago, 2,000 tons, is offered for bids.

## Will Handle Buffalo Iron

The General Commodities Corporation of Buffalo, recently incorporated with a capital stock of $100,000, to engage in the purchase of mines and minerals, ores, etc., and to engage in the purchase and sale of pig iron and for other purposes, will, it is understood, handle the 50,000 tons of pig iron recently purchased for speculative purposes by Hugh Kennedy and other business men of Buffalo. It is understood that the iron was purchased at $12 per ton.

Broxill & Bruel Machinery Co., Cincinnati, recently incorporated at $15,000, will manufacture a portable grinder for gas engine cylinders.

# Idle Cars

**Are Many and New Orders Are Few—Some Rail Business**

New York, April 6.—A published statement by President Alfred H. Smith of the New York Central lines that his system at the present time has $40,000,000 worth of idle cars and $10,000,000 in idle locomotives, a condition that is duplicated relatively by other roads, in eastern territory, supplies apparently the fundamental reason for the continued dullness of the equipment market. President Smith estimates that his system now has 50,000 idle cars, almost entirely iron ore, coal, coke and flat cars, which, though dead capital, as revenue-earners, figure steadily in interest charges.

Such orders for cars and locomotives as now are being closed are small. The American Car & Foundry Co. has taken 100 gondolas for the Illinois Central and the Pressed Steel Car Co., 15 passenger coaches for the New York, Westchester & Boston. The International & Great Northern has out a new inquiry for 500 box, 300 stock and 200 gondolas. The inquiry for 1,200 freight cars for the Missouri, Kansas & Texas, which has been in the market for some time, now is considered dead though this road may buy 15 passenger equipment. Sixty tank cars for the Grand Trunk also have been withdrawn. The Denver & Salt Lake is preparing specifications on 200 coal and stock cars. The Wilkes-Barre & Hazelton asks ten coaches and the Lehigh Traction ten street cars. The Virginian railway is in the market for 500 steel underframes and the Pennsylvania lines west for 150 underframes for cabin cars. An additional five locomotives for the Burlington, has been awarded to the Baldwin Locomotive Works, raising the total order to 55, all of which went to that builder.

Various tonnages of rails for export, previously mentioned, are unclosed, but action on some of these, especially the 10,700 tons for the British Isles, probably is not far distant. The 20,000 tons of girder rails for the Chicago Railways Co. has not been acted upon. A recent order for girder rails for the Rhode Island company with the Pennsylvania Steel Co., has been increased to 1,150 tons.

The Toledo Rail & Light Co. is in the market for 500 tons of girder rails.

The Southwark Foundry & Machine Co., Philadelphia, has become actively engaged in the manufacture of hydraulic and steam hydraulic presses. The company has a large volume of this work on its books.

# MEN OF THE IRON TRADE

**Who they are** **Where they are** **What they are doing**

George J. Simons, Berford Brittain and George W. English, all three of whom are well known in the iron trade, have opened offices under the name of Simons, Brittain & English, Inc., in the Oliver building, Pittsburgh, to represent a number of manufacturers of steel furniture and fireproof office equipment. Mr. Simons, president of the company, is the son of George H. Simons, secretary and treasurer of the St. Louis Architectural Iron Co., St. Louis. For many years, he had been district sales manager at Pittsburgh for the Art Metal Construction Co., Jamestown, N. Y. Mr. Brittain, for several years, had been in charge of the Pittsburgh territory for the Cooper-Hewitt Electric Co., a Westinghouse interest, but more recently was associated with the Art Metal company. Mr. Brittain is secretary of the recently incorporated company. Mr. English has been actively identified with the iron trade for a number of years. At one time he was superintendent of the blast furnace plant of the Cleveland Furnace Co., Cleveland, and later was superintendent of the Perry Iron Co., Erie, Pa., which operates

BERFORD BRITTAIN

a blast furnace at that city. Mr. English is treasurer of the company, which represents: The General Fireproofing Co., Youngstown, O.; the Dahlstrom Metallic Door Co., Jamestown, N. Y.; the architectural bronze department of the Gorham Co., New York; the Asbestolith Mfg. Co., New York; the Fred Medart Mfg. Co., St. Louis; the Standard Marble Works,

GEORGE J. SIMONS

St. Louis, and the American Mason Safety Thread Co., Lowell, Mass.

E. R. Crawford, president, McKeesport Tinplate Co., McKeesport, Pa., is enjoying a vacation at Havana, Cuba.

James A. Campbell, president, Youngstown Sheet & Tube Co., Youngstown, has returned from a short vacation at Hot Springs, Ark.

M. D. Flanigan, formerly general coal and ore agent for the Pittsburgh & Lake Erie railroad at Pittsburgh, now is identified with the J. H. Hillman & Sons Co., that city.

Myron Wick, of Youngstown, who has been connected with the Delaware Iron Co., Chester, Pa., has returned to become associated with the Elyria Iron & Steel Co., which is erecting a new tube mill at Cleveland.

D. J. Normoyle has been made manager of the Philadelphia office of the Niles-Bement-Pond Co., Inc. Mr. Normoyle also will continue in charge of the Pratt & Whitney Co.'s sales in Philadelphia territory, as formerly.

Howard A. Kerr has been transferred to the eastern district sales office of the Trumbull Steel Co., in the Grand Central Terminal, New York City. Mr. Kerr was formerly connected with the general sales department of the company, at Warren, O.

J. F. Gogle, formerly affiliated with the Rockwell Furnace Co., New York City, has organized the Audit Co. of New Jersey, Jersey City, N. J., of which he is president and secretary.

J. E. Rawson, Cuyahoga building, Cleveland, formerly district sales manager of the Braeburn Steel Co., has been appointed representative in Cleveland and northern Ohio of the Interstate Iron & Steel Co. and will sell the products of the plants at East Chicago, Ind., and Cambridge, O.

Alexander Taylor, of Toronto, formerly assistant secretary, has been appointed secretary of the Lake Superior Corporation, the Algoma Steel Corporation and subsidiaries, in succession to Thomas Gibson, now president of the Lake Superior Corporation. Mr. Taylor has also been appointed a director of the corporation.

Richard Peters Jr. has resigned his position as sales agent of the Producers Coke Co., Uniontown, Pa., and on April 1 became assistant to the general manager of W. J. Rainey,

GEORGE W. ENGLISH

with headquarters at 52 Vanderbilt avenue, New York City. Mr. Peters is well known in the coke trade with which he has been identified actively for several years.

# Prices Advance in England

## Both Pig Iron and Finished Material Prices Soar —Labor and Fuel Scarce

Office of *The Iron Trade Review*,
Prince's Chambers, Corporation St.,
Birmingham, Eng., March 26.

Pig iron prices are climbing steadily. In Cleveland the advance on the week has been 60 cents. Traders have been buying very cautiously, but are now obliged to come into the market and accept the present rates. Smelters state that with increases in cost, they are scarcely benefiting from the higher prices. Coke especially is becoming a very serious matter, quotations this week running as high as $6 per ton. The irregularity of deliveries adds to the cost in many ways. The workmen also are all taking either higher wages or substantial bonuses.

It is remarkable that the warrant stock at Cleveland continues to increase, the addition to store this month being 6,000 tons, and the total in the public stores 130,000 tons. This addition is largely accounted for by the small shipments which, for the month, are only about 7,000 tons. It is clear that the foreign trade has been practically suspended through heavy freights and ocean risks. East coast hematite is steadily rising in price, $23.40 being quoted for early delivery, while in some cases the quotation runs up to the extraordinary figure of $24 per ton.

Practically all descriptions of pig iron are sharing in the advance. At Birmingham yesterday quotations were generally 60 cents above those of a week ago. Some smelters decline business, having sold all they can produce during the next two or three months. Staffordshire smelters have raised their part mine forge iron to $16.80, while Derbyshire and Northampton irons are 60 cents higher. Generally hematite was unobtainable in Birmingham yesterday. In Scotland there has been a very substantial advance in hematite for which $25.20 is now asked. The difficulties of production are immense, owing to the irregularity of supplies, the shortage of labor, and the extreme difficulty of getting a fair day's work from the miscellaneous substitutes for the skilled men who joined the army.

### Finished Iron and Steel

It is significant that although prices are high, no week during the war period has witnessed such general advances as have been recorded this week. The most important rise next to that of pig iron is the one of $2.40, declared early in the week, for joists, plates and angles. All the works are very heavily booked. This makes the quotation $44.40. Both iron and steel hoops have been advanced to $45. The position has become acute in regard to billets, which are quoted very irregularly between $34.80 and $38.40. It is said that people with steel to sell promptly, can get what price they like. Those consumers who have American contracts running are congratulating themselves, but they are in a very doubtful position in some cases, as so many of the ports are congested with material which has simply been dumped from the ship, and allowed to lie indefinitely on the wharf through the inability of the railways to convey it inland.

## More Snap

### In Finished Material Markets—Wire Business Heavy

New York, April 7. (By wire.)—Some large makers report more life and promise in the finished situation the past week than at any time yet. Steel bars are active in Chicago and western territory, due particularly to supplemental buying by implement makers previously noted, and the outlook is favorable for the new price of this product. March wire shipments with the American Steel & Wire Co. were practically on a record basis, due largely to foreign demand, as the domestic trade is not so large.

Peace talk is now tending to keep down somewhat new export business for the United States Steel Corporation and other mills. Shipments by the Steel Corporation continue slightly in excess of new business and unfilled orders for March will record some loss.

## Death of Wm. K. Pierce

William K. Pierce, formerly president of the radiator manufacturing concern of Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y., shot and killed himself. He was 63 years old. While illness is ascribed as the immediate cause, yet he had been despondent because of business reverses.

William T. Simpson, vice president of the American Rolling Mill Co., Middletown, O., died at his residence in College Hill, a suburb of Cincinnati, on March 31. Death was caused by an illness of long duration. Mr. Simpson was born in Saratoga county, N. Y., in 1856, and had been actively engaged in the iron and steel industry since he was 18 years of age. He was proprietor of the first galvanizing plant west of the Allegheny mountains, and he was also interested in the old Cincinnati Rolling Mill & Tin Plate Co., which was afterwards absorbed by the United Steel Co. Mr. Simpson was one of the founders of the American Rolling Mill Co., and for the past 10 years has been manager of the Zanesville, O., branch.

## Twenty Millions

### Will Be Expended by the Bethlehem Steel Co., Says Schwab

Charles M. Schwab, president of the Bethlehem Steel Corporation, told stockholders at the annual meeting at Newark, N. J., April 6, that the company planned to spend about $20,000,000 for development of the Chilean ore properties and construction work at Bethlehem, and that the management felt that these expenditures should be borne out of earnings, especially as the company's present bonded debt is a good deal in excess of its capital stock issues.

Mr. Schwab added that he thought that everyone who understood the situation approved this policy. Referring to last year's operations and the large earnings reported, Mr. Schwab said the results had been gratifying, and stockholders could now realize values on their securities that might repay them for their long period of waiting. He suggested, however, that the prosperity of the Bethlehem Steel Corporation had been due to the fact that it had manufactured lines of steel especially in demand in the latter part of last year and so far this year.

The steel business generally had been poor, he said, but circumstances had favored the Bethlehem company. He added that so far as had been reported to him in the steel trade, business was improving, although he did not look for anything like a boom in the trade. Mr. Schwab refused to discuss the company's policy as to dividends. The number of shares represented at the meeting was 123,186 of preferred and 89,133 of common. Retiring directors were re-elected.

## Death of Wm. Disston

New York, April 7. (By wire.)—William Disston, president of the Disston Saw Works since 1896, died at Philadelphia, after several months' illness.

# Intoxication, a Cause of Accidents

## In the Interests of Safety, Saloons Should Not Be Allowed Close to Industrial Plants

BY THOMAS D. WEST

SO MANY industrial accidents have been traced to the habit of drinking intoxicating liquors during working hours, that plant managers are gradually coming to consider the saloon an enemy of safety. As a result of this conviction a movement has been launched to further legislation which will prevent saloons being operated within 800 to 1,000 feet of any industrial establishment. Resolutions favoring such laws have been passed by the Cleveland, Philadelphia and New England foundrymen's associations and the movement has the backing of influential men throughout the country. The American Foundrymen's Association, at its 1913 convention in Chicago appointed a committee, of which the writer is chairman, to devise ways of pushing back the saloon. In the course of my work as chairman of this committee, I proceeded to take pictures of workmen stealing out to get drinks during working hours. After several days' trial I found that the number of sentinels generally on the lookout helping the smugglers was such that I would probably get more bricks than pictures, and hence I abandoned this method of working.

However, my experience in back yards and tie-tramping brought me in contact with tricks that are resorted to by employes to steal out to get drinks that would be an eye-opener for many employers if they would attempt what I did in trying to get pictures. Among other surprising conditions I found men who as trusted yard foremen and watchmen served also as confederates to the smugglers. It all forcibly demonstrated to me that the only safeguard proprietors have against men sneaking grog into their plants is to have the saloons far enough away from their property lines, so that if workmen steal out there will be some chance for faithful supervisors to detect their absence from duty.

Abandoning the enterprise of a traveling photographer, I decided to take posed pictures which would illustrate a few of the many ways and means employed by workmen to carry intoxicants into the plant during working hours without any of the supervisory force being cognizant of such actions.

There are firms that have ceased trying to prevent men stealing out to get drinks and permit their passing out through regular gate entrances at any hour. There are in this instance men to be seen going in and out not only with one pail, but carrying two under the eyes of their firm's head officials. If one-half of all our firms would follow such practices we would soon be driven back to the day when all artisans or professional men were conceded to have no ability to do masterly work unless they were half drunk. This surely could not be tolerated universally now that all employers are held liable by the courts for all accidents, whereas a few years back employes were held responsible for what injury they might cause coworkers. We fail to perceive why a free gate is to be recommended for adoption by any firm.

The first of these posed pictures shows an employe who has left a saloon's side door and is about to cross the railroad tracks to reach the point where he is seen in Fig. 4, handling the drink to a confederate inside of the fence, which is about 9 feet high. It makes little difference how high the fence is. The grog will get over it even though it might require a block and tackle to do the job.

A paper read at the annual convention of the American Foundrymen's Association, Chicago, Sept. 8-11, 1914.

FIG. 1—MILK FOR LUNCH INSTEAD OF BEER

FIG. 2—WORKMAN RETURNING TO PLANT WITH A BUCKET OF BEER

FIG. 3—AN ACCIDENT RESULTING FROM INTOXICATION

FIG. 4—PASSING THE BEER OVER THE FENCE INTO THE WORKS

FIG. 5—DRINKING FROM BUCKET HIDDEN IN FOUNDRY YARD

FIG. 6—MAN BEING DISCHARGED FOR INTOXICATION

Another view shows a workman, with his bucket, stealing out of a hole made by a removable board in the fence. He might get to the fence by going through a basement or otherwise. Fig. 2 shows the miscreant, with his pail and perhaps a stomach full, returning to steal back into the shop. This special saloon building is about as close to the firm's property line as the fire limit laws will permit. A confederate is seen standing on the saloon steps. There is generally some one anxious to advise the smuggler whether the coast is clear for the sake of the drink he may get to recompense his services.

When the intoxicant is once inside the fence it must, as a rule, be hidden so that none of the faithful supervisory force can have any knowledge of its having been sneaked into the plant. It is often surprising the shrewdness and ingenuity that men thought to have little brains will display in devising ways and means to get intoxicants into a plant and hide them. Fig. 5 shows one of the ways. The barrel seen is in a corner of a foundry yard where the drinker is fairly sure of not being caught in emptying his pail as best suits his convenience. He can get to this in a few minutes so that his absence from duty is not noticed.

It is generally impracticable for faithful superintendents and foremen to be sure that workmen are befogging their brains with smuggled drink until there is a quarrel or some accident occurs. When a supreme court in a state like Massachusetts hands down a recent decision such as the following, we are brought, as employers face to face with an injustice for which it is difficult to find a parallel in any other situation in life.

"A drunken employe is a human parallel to the fragment of physical equipment which may be classified as defective material and cause injury to workmen. If one workman is injured through a drunken workman the employer's responsibility does not lessen, because of the intoxication. The employer whose defective equipment is the cause of the injury is responsible. The employer whose workmen cause injury to fellow workmen is also responsible."

Fig. 3 is a posed picture of an actual occurrence wherein an employe went out every lunch hour for a drink, brought back beer with him in his dinner bucket, and one day about half an hour after starting the afternoon's work was thrown 10 feet and knocked unconscious by the bursting of an emery wheel, that was thoroughly safeguarded. At the time of the accident this man was grinding small, wedge-shaped steel castings and not having his wits about him he permitted the sharp end of one to be drawn in between the wheel and the rest thus causing the wheel to fly into four

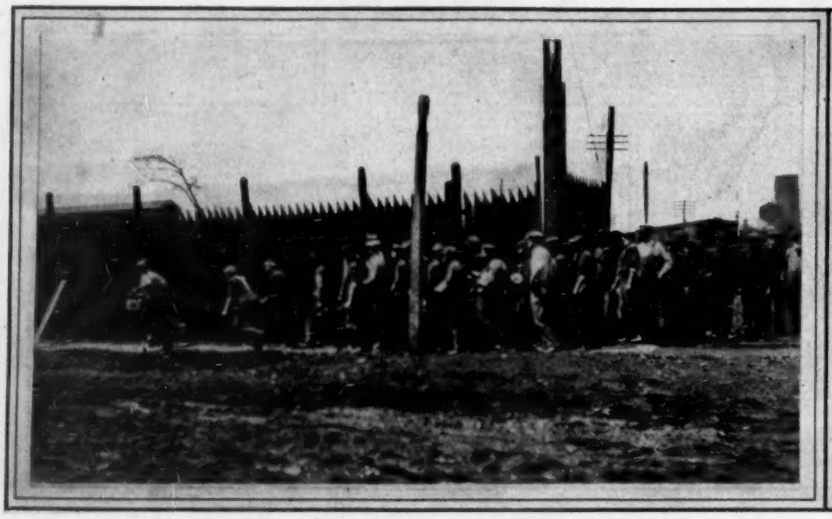


FIG. 7—THE NOONDAY RACE FOR THE SALOON

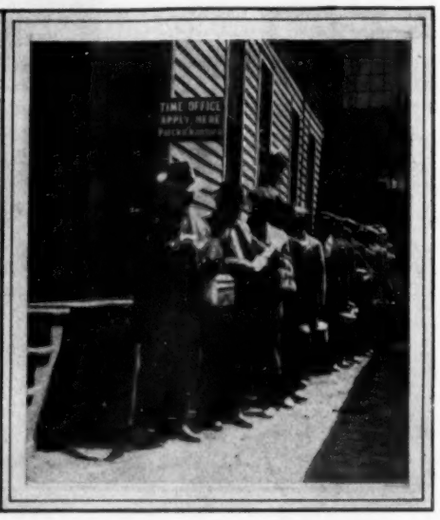



FIG. 8—MEN PAID IN CASH DO NOT VISIT THE SALOON

pieces, one of which struck him in the head. He was carried to the hospital where for many hours the doctors could not express an opinion whether he would live or not. In about six weeks he returned to his work.

Another accident, following only a short time after the foregoing in the same plant was due to a man so befogging his brain with drink, unknown to the foreman, that he was unable to carefully steady one end of the bottom-pour ladle, illustrated in Fig. 9. It was a hot day and one of the men instead of drinking good water or milk to quench his thirst, stole out between "blows of the steel" to get a drink at a nearby saloon. Upon returning and taking one of the handles he could not control his end of the ladle steady so that the stream from the bottom could pass directly into the gate and fill the mold. Instead it hit the top of the flask and spattered the metal in all directions. This caused every one to run away from the ladle, but not before one man was very badly burned and several others so scorched as to compel their being taken care of by a doctor.

It is true, as some contend, that men can drink during the night or on their way to work in the morning so as to be unfit to be trusted in their positions and on this ground some maintain that the only way for employers to guard against intoxicants causing accidents is for a community to be strictly dry. While this has much truth, still some have to acknowledge that if we cannot have a whole loaf, a half loaf is better than none. In this connection, men who are addicted to taking drinks during the night, or on their way to work are generally known and "spotted" so that superintendents and foremen can be on their guard, whereas with the men who steal out during working hours, there is no method of warning the supervisors.

Fig. 8 shows men receiving cash for their wages, a practice generally followed by employers. However, there are firms that pay their employes by checks. This involves an evil that exceeds most all others in attracting workmen to saloons. It causes many to commence imbibing intoxicants who otherwise might never indulge. There are no doors that open with a greater welcome and there are no places so glad to cash checks for employes as saloons. It is no unusual occurrence for the bill for drinks to absorb nearly, if not all, of a workman's check, thereby leaving his family penniless and his honest debts unpaid. A firm that continues this practice when it has made no provision for cashing its employes' checks is not only disregardful of much that is involved in "Safety First" but of morality as well.

Chas. L. Huston, vice president of a big steel and iron plant located at Coatesville, Pa., states that, "The decrease in accidents in our steel mills for the past six months with Coatesville dry is 54 per cent. The decrease in the application for aid during the same period is 75 per cent. While it was predicted we would experience difficulty in securing labor in a dry town we have had an abundance of labor at all times. Many have sought work in our mills because they wanted to work in a dry town where they could save some of their money."

Mr. Ridgway, of Craig Ridgway & Son, declared before the members of the Philadelphia Foundrymen's Association last spring that liquor is responsible for the majority of accidents in mills and factories. He further stated that "The liquor question has ceased to be a mere moral one and it is now a business question for business men to solve."

Wallace H. Rowe, president of the Pittsburgh Steel Co., in a letter to the liquor license judges of Westmoreland county, Pa., says "This company employs 5,250 men in its mills, with a payroll of $300,000 per month. We have experienced a growing inefficiency in the service of these men and increased carelessness in the mills, resulting in accidents and death largely attributed to the heavy use of beer, whiskey and other alcoholic drinks. One of the largest steel companies in this district, after an exhaustive examination of the causes of accidents in the mills, makes the broad statement that 85 per cent of such accidents are due directly or indirectly to liquor."

A leading insurance company says: "A man whose nerves have been made unsteady by a recent debauch or the use of alcohol should not be permitted to operate dangerous machinery or carry on dangerous work. He endangers not only his own life, but that of others." There are few if any who would undertake to dispute this statement, but the great difficulty of the employer who has saloons close to his plant is to discover, before it is too late, when a workman should not be permitted to remain at his job. It is not at all uncommon to see men with befogged brains being discharged as shown in Fig. 6, but the difficulty, as previously stated, is to make this discovery before it is too late to prevent the injury that sneaking to nearby saloons to obtain drink during working hours can do.

The Zurich Building Trades Sick Club learned by statistics obtained during the years 1900-1906 that there were three accidents on Monday to two on other days. The German Emperor states that, "Nerves are undermined and endangered from youth up

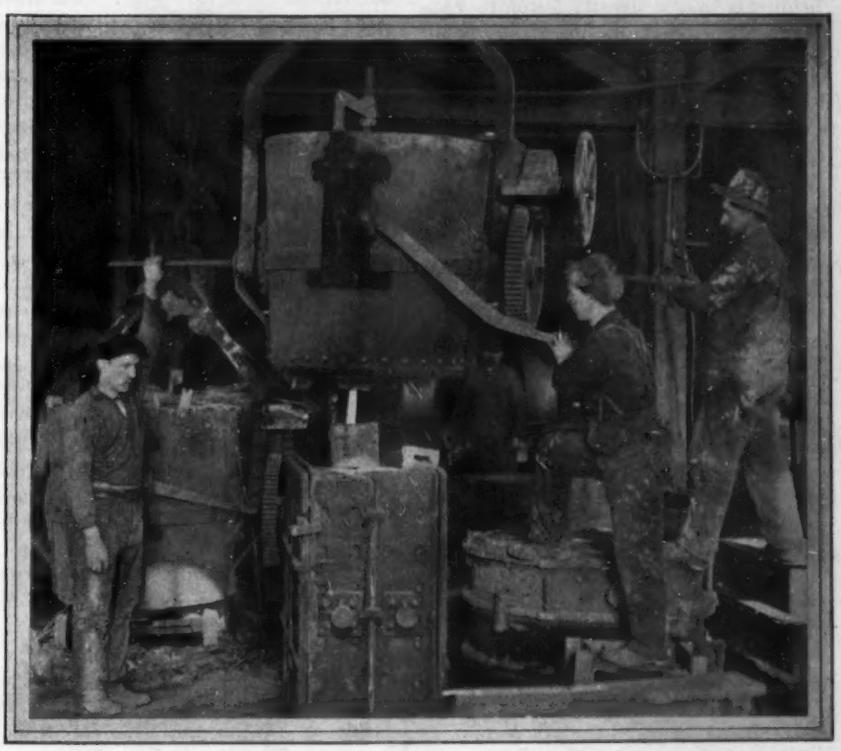


FIG. 9—ONE OF THE MEN AT THE LADLE CAUSED A SEVERE ACCIDENT BY DRINKING DURING WORKING HOURS

by the use of alcohol and that in war, the time for steady nerves and a cool head, victory lies with the nation that uses the smallest amount of intoxicants." The above is given regarding Germany to show that the claims made by many that imbibing intoxicants in that country does no injury are without foundation.

*Milk Instead of Intoxicants*

There is little question but that the existence of saloons close to industries has a greater influence in tempting the young and increasing the appetites of adults for intoxicants than almost any other agency that might be mentioned. Remove the saloon from the proximity of industrial establishments and it greatly helps to educate men away from the drink habit. This calls to mind recent utterances by William H. Barr, president of the National Founders' Association and general manager of the Lumen Bearing Co., Buffalo, at a banquet given in his honor by the Cleveland Foundrymen's Association last January. During the discussion of safety work at this banquet Mr. Barr stated that for a while he did not know whether he was operating a foundry or a brewery. He said that conditions became so serious that he concluded some efforts must be made to cause less drinking of intoxicants by his employes. He conceived the idea of trying to induce his men to drink milk in place of beer, especially during the noon hour. He installed a refrigerator in his plant and asked one of his trusted employes to commence this practice. For a while this workman was scoffed at by his fellows, but Mr. Barr said that an inspection of the refrigerator about a couple of months later disclosed the encouraging fact that 47 bottles of milk had been placed there for that number of workmen who had voluntarily adopted the milk-drinking habit. The facts regarding this innovation have been published before, but are repeated here for emphasis.

A realization of the great importance of Mr. Barr's innovation in helping men to discard drinking intoxicants caused me to labor for its extension. To this end I interviewed one of the largest milk dealers in Cleveland to solicit his interest in doing all he could to replace beer with milk in the city's industries. I was greatly pleased to be informed he had done some missionary work in this line and was satisfied that if some educational or welfare society would take an interest in the problem great progress could be made and accidents in our plants could be materially reduced. Believing this cause could be greatly aided in our city by appealing to proprietors I sent out a large number of letters on the subject to employers.

Ralph H. West, president the West Steel Casting Co., Cleveland, recently has installed a refrigerator to store milk for his men. Fig. 1 shows many of them taking their lunch out of doors in the shade instead of following the old practice of nearly exhausting their strength in a mad race for the saloon when the lunch hour whistle blows. The latter practice is shown in Fig. 7. Our firm supplies the ice to keep the milk cool. A pint bottle costs the men 4 cents. They purchase checks in quantities and hand them to a care taker when they wish. The refrigerator is without a lock and the men are put on their honor to not take a bottle without depositing a check with the clerk who is in another room. Some of the men not only have a bottle for their lunch hour, but also order one for the mid-morning or, more frequently, for the afternoon during the heat of casting time. In other words they are free to obtain it when they please and to order as much of it as they desire. They are finding it supplies a strength to the body that is invigorating and lasting.

*Choose Between the Drink or the Job*

Agitation of back with the saloon as a "Safety First" measure has done much during the past year to influence the strict disciplining of men addicted to drinking. Most everyone recalls our navy's late restriction on the liquor question. However, of the many prohibitive steps employers are now taking to cut out the drink, we give only the following to show the tendency of the time. A recent editorial in the *Chicago Inter-Ocean* says:

"This is the duty of the sober man. Time was, and not very long ago, when the brilliant alcoholic could hold a job in almost any trade or profession. That time is past. Industry has come to realize that dependability is better than brilliancy and that brilliancy itself is more common with men of clear heads than with those whose brains are muddled with alcohol." *The Atlanta Constitution* says: "You young men or middle-aged men or old men had best take note of the sign of the times and make up your mind to the fact that in this day and generation it is your drink or your job. You may compromise with your conscience or laugh at the temperance orator but you cannot fool the man with your job in his hands. Nor can you sign a truce with the growing ostracism that separates success from the man who habitually crooks an elbow."

There is little doubt but that several states soon will witness an agitation of questions involved in the use of intoxicants, especially in the cities, such as they have never seen before. It behooves all desirous of advancing "Safety First" work to help shape events so that in any of the entanglements of politics to come, the saloon shall at least be forced back 500 to 800 feet from the property lines of foundries, mill, factories and other industrial plants in order to assist the work of reducing accidents.

## Book Review

**Kline's Piece Work Rate Setting Table,** compiled by Archibald L. Kline; sold by Mortimer J. Silberberg, Peoples Gas Building, Chicago; bound in leather, pocket size; furnished by *The Iron Trade Review;* price, $5.

This book is compiled to render easy computation of piece work rates and has been used for some time in the plants of one of the largest industries in America. The tables are arranged in four main divisions, for seven, eight, nine and ten-hour days, each being arranged into sub-divisions of seconds, minutes and hours. By an easy method it is possible to figure piece work for any given operation at any rate per day from 75 cents to $5. The tables give the increase by steps of 10 cents except that such common rates as $1.25, $1.75, etc., are also presented.

As an aid to cost estimating and time keeping this book fills a need; it does away with much computing and liability to error and thus saves a great deal of time in setting piece rates.

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The Max Ams Machine Co., Mt. Vernon, N. Y., has issued the second volume of its annual year book entitled "The Seal of Safety". The opening chapters of the book contain a condensed history of the canning industry from its beginning in 1782. A comparison is made of the primitive canning machinery used at that time with the improved automatic machinery now in use. Several chapters are devoted to a description of the legal phases of the canning and packing industry. A number of useful tables of weights and measures, etc., are included. The line of canning machinery made by this company is illustrated and described in the last 60 pages of the book.

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The Kissel Motor Car Co., Hartford, Wis., has issued an attractive catalog devoted to the automobile which it manufactures. Specifications for the various parts are included.

# Electric Smelting of Ferro-Alloys

## The First of Four Articles—Details of Types of Furnaces Used With Particulars Covering Prominent European Plants

BY ROBERT M. KEENEY

THE PROBLEM encountered in the manufacture of ferro-alloys, it is stated in a bulletin issued by the Bureau of Mines, has been the production of an alloy with a low percentage of carbon, a high percentage of the alloying element, and a low percentage of impurities that might be injurious to steel. The alloy should have a low enough melting point so that it can be used in a steel bath of ordinary temperature. To obtain this feature it has been necessary in some cases to produce an alloy with a high percentage of carbon and a comparatively low percentage of the alloying element. The ferro-alloys with a low percentage of carbon are considerably more expensive than the high-carbon alloys, because of the extra refining necessary, which requires a higher power consumption and increased quantities of expensive ores for deoxidization. It is also essential to produce a ferro-alloy of uniform composition, a difficult feature with some alloys. A ferro-alloy that is not uniform is a source of trouble and expense in the manufacture of alloy steel, because it is not possible to regulate closely the composition of the steel produced. How these points have influenced the development of the manufacture of ferro-alloys is shown in the following discussion.

Up to the year 1899, when the electric furnace was first used for the manufacture of ferro-alloys, all such alloys were made in the blast furnace or the crucible furnace. Ferro-manganese with a high percentage of manganese was first produced at Bonn, Germany, in 1886. This alloy was made in a crucible and contained 70 to 80 per cent manganese. In 1873 the manufacture of ferro-manganese was first conducted in the blast furnace, a method by which the greater part is manufactured today. In 1875 ferro-silicon containing 10 to 12 per cent silicon was made in the blast furnace. The manufacture of ferro-chrome in a commercial way in the blast furnace was started in 1886. Thus up to the year 1890 the only method of manufacture of ferro-alloys was the use of the crucible, the blast furnace, or occasionally the open-hearth. In every case carbon in the form of coke or anthracite coal was used as a reducing material.

The production of a ferro-alloy with a low carbon content or a high percentage of the alloying element is limited in the blast furnace by three difficulties—first, the temperature is too low for the reduction of some of the oxides of the alloying metals, so that only alloys of metals reduced at a comparatively low temperature or of low melting point can be made; second, it is difficult to obtain an alloy containing a high percentage of the special metal; and third, it is impossible to produce a ferro-alloy low in carbon because of the great excess of carbon in the charge.

With the crucible, owing to the small scale of operation necessary, the process is necessarily expensive. Owing to the temperature limitation, certain oxides can not be reduced and metals of high melting point cannot be melted; it is difficult to obtain an alloy with a high percentage of the special metal; and if a graphite crucible is used, the percentage of carbon tends to be high in the ferro-alloy.

For these reasons, up to 1890 the

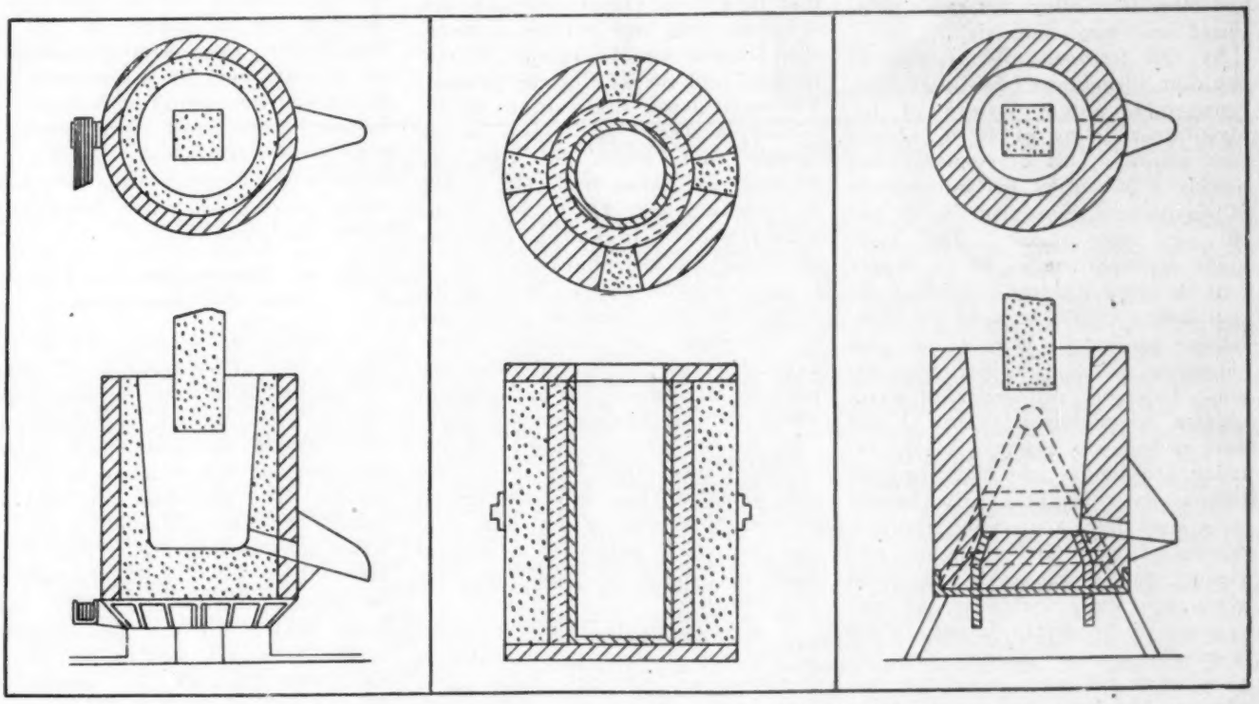


FIG. 1—PLAN AND ELEVATION OF SIEMENS FERRO-SILICON FURNACE

FIG. 2—PLAN AND ELEVATION OF GIROD RESISTANCE FURNACE

FIG. 3—PLAN AND ELEVATION OF GIROD ELECTRODE FERRO-ALLOY FURNACE

manufacture of ferro-alloys was mostly confined to the production of ferro-manganese of 70 to 80 per cent manganese, ferro-silicon of 10 to 12 per cent silicon, and ferro-chrome of 30 to 40 per cent chromium and to 6 to 12 per cent carbon.

*Introduction of the Electric Furnace*

The opportunity for improvement in the production of high-grade ferro-alloys by the use of the electric furnace was made evident by the researches of Moissan, beginning in 1890, upon the reduction of metallic oxides in the electric furnace. Moissan used an arc furnace, consisting of a chamber of refractory material, into which two horizontal carbon electrodes were introduced.

The commercial production of ferro-alloys in the electric furnace began in 1899, when the Bullier patents for the manufacture of calcium carbide were declared valid in France. There was also an overproduction of calcium carbide, which culminated at the same time. The overproduction rendered it necessary for many established carbide works to seek new uses for their electric power and electric-furnace installations. Those works began the manufacture of ferro-silicon, ferro-chrome, and ferro-manganese in their old carbide furnaces. At that time the manufacture of ferro-manganese in the electric furnace did not prove successful because of the high loss by volatilization, and it was abandoned. The production of high-percentage ferro-silicon, ferro-chrome, and other ferro-alloys not easily volatilized was very successful.

By 1902 ferro-silicon containing 25 per cent silicon was being used to a considerable extent instead of the blast-furnace alloy of 10 to 12 per cent silicon. This development was quickly followed by the introduction of ferro-silicon containing 50, 75 and 90 per cent silicon. The high-grade ferro-chrome of 60 to 70 per cent chromium content and 5 to 8 per cent carbon rapidly replaced the blast-furnace product of 30 to 40 per cent chromium and 6 to 12 per cent carbon. Later the production of ferro-chrome containing less than 1 per cent carbon was begun. As the refining possibilities and high temperature available in the electric furnace were more fully appreciated, the production of many ferro-alloys not previously made began. Also in recent years, by careful control of the temperature of the electric furnace, which is possible in the ordinary arc furnace when run as a resistance furnace, it has been found possible to make ferro-manganese without an excessive loss of manganese by volatilization. This ferro-manganese is usually combined while molten with molten ferro-silicon to produce silicon-manganese, or a similar alloy.

There has been comparatively little change in the type of electric furnace used for making ferro-alloys since 1899. In many plants the old carbide furnaces are still in operation, and where the ferro-alloy is simply being produced directly from the ore with carbon as a reducing agent, the furnace is essentially of the old Siemens crucible type, having a conducting hearth of carbon and an upper vertical electrode, Fig. 1. There are several modifications, which are described later, but their difference in design is mainly in shape and in the manner of introducing the current. With one or two exceptions, introduced lately, ferro-alloy furnaces are run with open tops, as in the first years of manufacture. There is no shaft, so that most of the reduction is by solid carbon.

The growth of the ferro-alloy industry in Europe has been rapid since 1899, but comparatively slow in the United States. In Europe there are about 25 plants engaged in the manufacture of ferro-alloys by the electric furnace, as compared with two plants in the United States. In addition to these there are three companies using means other than the electric furnace in the United States, and one electric-furnace ferro-silicon plant in Canada.

There are several reasons why the growth has been slower in America than in Europe. Hydroelectric power is not as cheap here and not so favorably located for the receipt of raw material and the sale of the product. The water-power sites can not be developed so cheaply as at many of the foreign sites, where the cost per kilowatt-year varies from $10 to $20, as compared with $20 to $40 in the United States. In Canada power is somewhat cheaper, but much of it is in inaccessible places. Most of the Norwegian and Swedish plants are on tidewater or navigable rivers. French works are within about 200 miles of Marseilles. The use of ferro-alloys in the manufacture of high-class steels did not advance as rapidly in the United States as in Europe, and owing to less favorable natural advantages, electrochemical and electrometallurgical industries in general have not made so rapid progress and growth.

A large proportion of the ferro-alloys used in the United States is imported, as, although there is a duty, local manufacturers are not able to supply the whole demand. About one-half of the ferro-manganese and one-half of the ferro-silicon, as well as a large part of the ferro-tungsten, used in the United States is imported. More ferro-titanium and ferro-vanadium is manufactured here than abroad. The ferro-chrome production just about supplies the domestic demand.

In Europe the industry of manufacturing ferro-alloys in the electric furnace is in excellent condition commercially, with the demand for alloys steadily increasing. Because of the race between European countries in the building of large navies, there is a great demand for ferro-chrome. In Europe, the sale of ferro-alloys, especially ferro-silicon and ferro-chrome, is controlled by a syndicate of the various plants, each plant, according to its capacity, supplying a certain part of the total market demand.

In the United States there is a ferro-titanium manufacturing company at Niagara Falls, N. Y. An electrometallurgical company has one plant at Kanawha Falls, W. Va., where the principal product is ferro-chrome, and another at Niagara Falls, N. Y. Other alloys made are ferro-silicon, ferro-tungsten, ferro-vanadium, ferro-molybdenum, and ferro-phosphorus. A chemical company at Primos, Pa., manufactures metals and ferro-alloys by chemical methods or in combustion furnaces. Among its products are ferro-tungsten, ferro-vanadium, tungsten metal, ferro-molybdenum, ferro-chrome, ferro-nickel, and ferro-boron. Another company manufactures ferro-vanadium by the thermit process at Bridgewater, Pa. Another company has a plant for the manufacture of metals and ferro-alloys at Newark, N. J., but imports most of its products from its foreign works. Among its products are ferro-titanium, ferro-vanadium, ferro-molybdenum, ferro-chromium, and chromium.

*Types of Electric Furnaces Used in Ferro-Alloy Manufacture*

A furnace commonly used in the manufacture of ferro-silicon and other ferro-alloys is of the Siemens type, Fig. 1. The furnace is circular in cross section with one upper carbon electrode and a conducting hearth of carbon. The electrodes are held by holders of various types, some of which are shown in Fig. 4. The holders are attached to cables running to hand adjustment wheels. The electrode holders are not usually water cooled. As yet the use of round electrodes threaded for continuous feeding has not been widespread in ferro-alloy works. In the ferro-silicon furnace it is necessary to line the

bottom with carbon paste resting on an iron plate to which the bottom electrical connection is made. The paste of carbon may be surrounded by fire bricks, which are set in a steel shell or are held together by sheet-iron bands. The fire bricks are often not used at all. There is one tap hole. Fire brick can not be used as the interior lining in a ferro-silicon furnace, because it is rapidly attacked by the ferro-silicon. The older furnaces are operated with single-phase alternating current, but the more recent installations are connected to a phase of a three-phase circuit as shown in Fig. 7. These furnaces are built in sizes varying from 200 to 1,000 kilowatts. A 225-kilowatt furnace may have a crucible 2 feet 6 inches in diameter at the top and about 2 feet in diameter at the bottom. The external dimensions are: Diameter, 4 feet; height from base to top, 5 feet; masonry base, about 1 foot 3 inches high. The lining is about 9 inches thick. The furnaces are operated at 50 to 80 volts. A 12-inch square or circular electrode is used. The power factor varies from 0.8 to 0.9.

If a ferro-chrome or alloy of medium carbon percentage other than ferro-silicon is to be made in a furnace of this type, the carbon bottom is used, but in the walls the carbon is replaced by a basic lining of magnesite and tar. After a furnace has been operating some time, the material of the charge chills on the walls, forming its own lining, and some of the ferro-alloy reduced tends to freeze on the hearth, thus protecting the main part of the molten metal from the carbon. If a ferro-chrome containing less than 2 per cent carbon is desired, the lining is of chromite, but this is rather expensive. Ferro-silicon and ferro-chrome furnaces of this type have been in continuous operation for periods of two to four years.

Usually the smaller furnaces are charged by a laborer, who shovels the new materials from the floor at the tapping level into the top of the furnace. Larger furnaces have a steel platform around the top for charging from a bin system. In some works the furnaces are set on trucks, so that an old one may be quickly replaced by a new one.

In its early experiment work the Girod Co. devised a crucible furnace in which heating is by resistance. This furnace, Fig. 2, consists of a crucible of some refractory material, which is surrounded by a material of high electrical resistance. The use of ferro-silicon for this purpose was patented by Girod. Sometimes coke is mixed with the ferro-silicon to form the resistor. Outside of the resistor are set four carbon blocks, which serve as electrodes and are separated by brick of high insulating qualities to prevent short circuits. The whole is incased in a steel shell and mounted on a framework for tilting by hand. The materials are charged in by hand, and the crucible is covered with a brick cover. Either direct or single-phase current may be used. A general difficulty with a furnace of this type is the prevention of short circuits caused by uneven heating of the crucible, and care must be taken to connect the furnace so that the current takes the longest possible course. The furnace is used for manufacturing ferro-alloys that do not require a temperature above 1,600 degrees Cent. It is built in sizes up to 150 kilowatts.

For the manufacture of ferro-alloys of high reducing or melting point, other than ferro-silicon, Girod uses a furnace, Fig. 3, of circular cross section, with one or more upper carbon electrodes in parallel and a conducting hearth of dolomite and tar having mild-steel rods embedded or openings into which molten metal is poured and allowed to freeze. These rods are placed radially around the bottom. The ends project outside and are water-cooled where the cables are attached. The lining is usually of dolomite or magnesite throughout, but with the production of low-carbon ferro-chrome a chromite lining may be used. Where there are several upper electrodes the diameter of the furnace is greater and the depth about the same as in the single electrode furnace. The general dimensions are about the same as given for the Siemens furnace, with a conducting hearth of carbon. Either direct or alternating current may be used.

A furnace recently designed for the manufacture of calcium carbide and ferro-silicon on a large scale is the Helfenstein furnace, Fig. 5, which has several shafts set side by side feeding a crucible beneath. Each shaft has its own vertical top electrode, but all are connected electrically by bottom electrodes in the form of a conducting bottom common to all the shafts. There is no other connection between

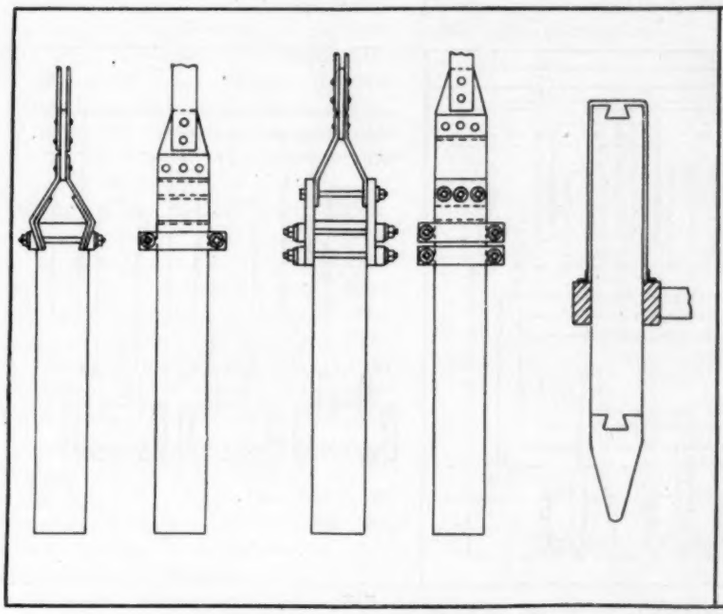


FIG. 4—ELECTRODES AND HOLDERS USED IN SIEMENS FERRO-SILICON FURNACE

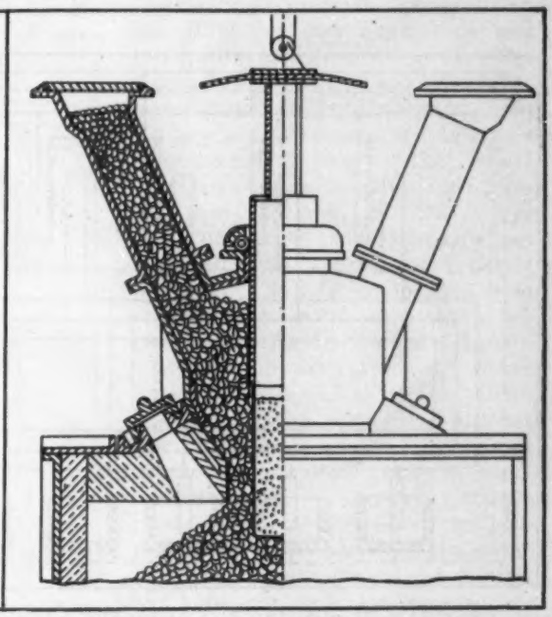


FIG. 5—ELEVATION OF HELFENSTEIN FURNACE

the shafts, so that it is possible to produce different products simultaneously. As shown in Fig. 5, the shafts enter the crucibles from each side, with the electrodes in the center. The whole furnace is thus rendered air tight. One large 7,500-kilowatt Helfenstein furnace is operating in France and several are being constructed. The use of large units with an air-tight furnace reduces the electrode and the power consumption considerably.

From the types of electric furnaces described it may be seen that in general an electric furnace for ferro-alloy manufacture consists of a crucible without a roof, having either a conducting or non-conducting hearth and an upper vertical carbon electrode or electrodes. Most of the furnaces first built had a conducting hearth, and this is still common in furnaces up to about 750 kilowatts, but for larger sizes experience has shown that the non-conducting hearth is preferable. There is a considerable loss of electrical energy by dissipation through the lining, and there is a tendency to have a lower power factor because of the circuit being more completely inclosed in iron. In working a small furnace intermittently—that is, discharging it completely before charging it again—the conducting-hearth furnace is much more easily operated and started when cold. When a large furnace is to be operated continuously for several months at a time on one alloy, this advantage of the conducting hearth is of no importance. A factor little considered in the construction of ferro-alloy furnaces is the power factor. Most of the furnaces are completely inclosed in sheet steel, whereas bands would do as well, with much less induction in the circuit.

As has been stated, the ferro-silicon furnaces are lined with carbon, and most of the furnaces to be used in producing other alloys, with a basic lining of magnesite or dolomite brick or a mixture of tar with either material. When low-carbon ferro-chrome is being made, the lining in some furnaces is chromite. Generally a furnace is designed so that the electrode or electrodes are a sufficient distance from the walls to permit a chilling of the material charged upon the walls. This practice has given the most satisfactory lining. With such an arrangement furnaces have been run two or three years without being relined. The average furnace operating continuously runs about two years before being shut down for repairs. A furnace being operated intermittently must of course be relined oftener.

*Waste of Heat in Open-Top Furnaces*

As most of the reduction of oxides in ferro-alloy manufacture is done by solid carbon at a high temperature, most furnaces are run with an open top into which the charge is placed, around the electrode. There results a considerable waste of heat that might be used in preheating the charge. In most of these furnaces the electrode dips about 12 to 15 inches beneath the top of the furnace, which is kept filled with cold material so that the molten mass beneath will not be exposed. There is burning of carbon monoxide around the electrode and an escape of a large volume of gas through the top of the furnace house. As previously mentioned, there has been a seemingly successful attempt made to overcome this waste at Kopperaaen, Norway, with a modification of an existing furnace. The Helfenstein furnace has this objection removed as it is air-tight, and in addition has feeding shafts, where the charge is preheated by the waste gases. In the manufacture of the higher-priced alloys, such as ferro-tungsten and ferro-vanadium, it is impossible to use any furnace but one with an open top because of the intermittent nature of the operation, but in making ferro-silicon and ferro-chrome, it seems advisable to preheat the charge as much as possible.

A large number of the first ferro-alloy furnaces were supplied with direct current when the furnace house was built adjoining the power house so that there was only 20 feet between the furnace and the generator. It was soon found that the electrolytic action in a direct-current furnace resulted in deposition of potassium, sodium, calcium, aluminum, and other metals with the alloy so that as pure a product could not be obtained with direct as with alternating current. When alternating current was first used, single-phase current was more common, so that the arrangement remained the same as previously, the generator delivering directly to the furnace at the desired voltage without any transformation.

Later when three-phase current became common, furnaces designed to take single-phase current were connected in groups to three-phase systems by several methods. A method

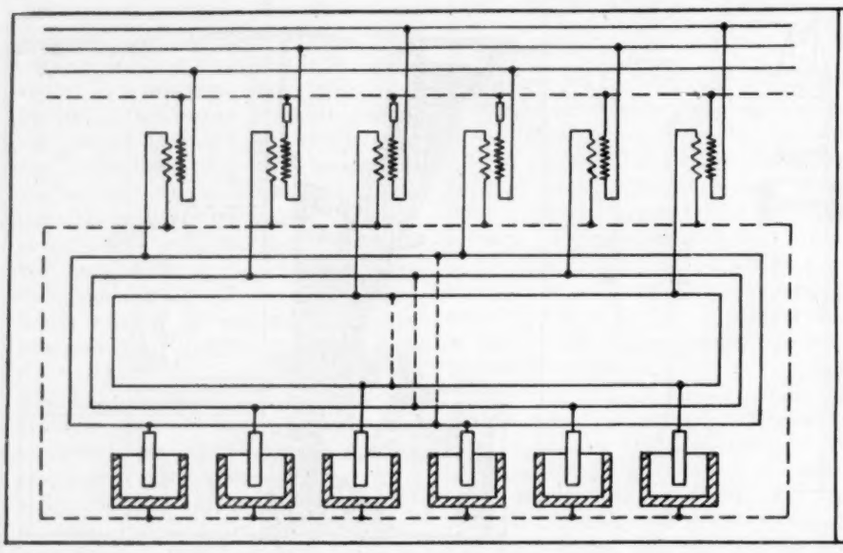


FIG. 6—SYSTEM OF ELECTRICAL CONNECTIONS FOR SEVERAL SMALL FURNACES

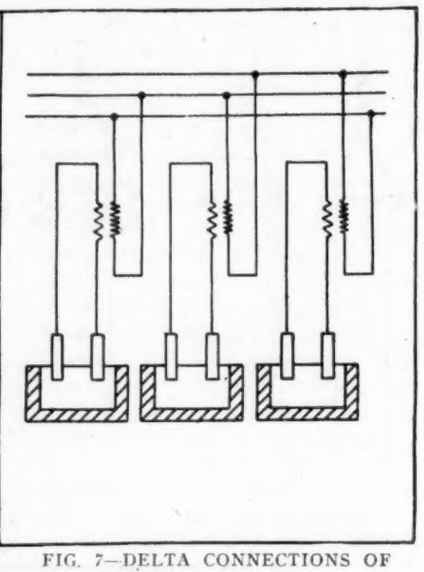


FIG. 7—DELTA CONNECTIONS OF THREE SINGLE-PHASE FURNACES

commonly used for the furnace with a conducting hearth and one or more vertical electrodes is shown in Fig. 6.

The primary and secondary are both connected in star connection, with the furnace bottom as the neutral point of the secondary circuit. There are two transformers to a phase, supplying two furnaces. In this system there is apt to be an unbalancing of the load on the three phases. It is used only with small furnaces. To get a better balancing of phases, conducting-hearth furnaces are connected so that each furnace is connected to a phase or there may be two furnaces to a phase, the whole system being in delta connection.

For single-phase furnaces the method shown in Fig. 7 is the best, where three non-conducting bottom furnaces are each connected by the delta arrangement to the three transformers of a three-phase line. Thus the primary and secondary are both connected by the delta system. By this arrangement there is a better balancing of the load in the separate phases. Also it is possible to cut out one furnace if desired.

A three-phase furnace with a non-conducting bottom is connected as in Fig. 8, where three electrodes are each connected to a transformer, there being a common neutral line between the three transformers. It is not difficult to keep the phases balanced in this system, and it is very satisfactory. If there is more than one electrode to a phase in a furnace of this type it has been found difficult to keep the phases balanced. That has been the experience with one electric pig-iron furnace, whereas with others no difficulty has been experienced.

### *Some European Electric-Furnace Ferro-Alloy Plants*

The main works of Keller, Leleux & Co. are at Livet, Isere, France, about 20 miles from Grenoble. There is also a small plant using 450 kilowatts at Kerrouse, in the same district. The company originally manufactured only calcium carbide, but later took up ferro-alloy production on a large scale in conjunction with the production of carbide. Livet is connected with Grenoble, which is on the main line of the Paris, Lyons & Marseilles railroad, by an electric and steam tramway.

The company develops its own power on the Romanche river, where a head of 200 feet is utilized by means of a 1½-mile tunnel. The cost of power is said to be $10.66 to $13.33 per kilowatt-year, or 0.12 to 0.15 cent per kilowatt-hour. At high water there is a maximum of 12,000 to 14,000 kilowatts available, but for the four months from November 1 to March 1 this drops to 7,000 kilowatts, some of the furnaces being shut down and others operated with reduced power.

The first installation of generating machinery, which is still in use, consists of six single-phase dynamos of 900 kilowatts each, delivering current of 55 cycles directly to six furnaces at 55 volts. A more recent installation contains three 2,200-kilowatt three phase machines, connected in parallel and generating current at 2,300 volts and 25 cycles. This is stepped down by transformers at the furnaces. In addition to the equipment mentioned there are several smaller generators used for general purposes.

The plant is arranged so as to require considerable rehandling of materials to be charged into the furnaces. There are 3 furnace houses of stone-and-steel construction, 35 feet wide,

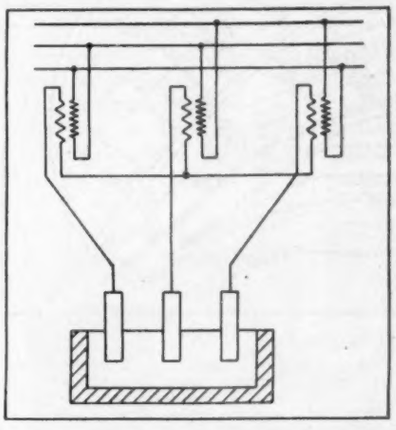


FIG. 8—ELECTRICAL CONNECTIONS OF A THREE-PHASE FURNACE

75 feet long, and about 20 feet high. Each building contains three furnaces, which are set up against one wall with the transformers in a room directly outside the wall. Or, if the furnaces are supplied directly by the generators, the arrangement is the same except that there are no transformers. The space in front of the furnaces is used as a tapping floor. Both carbide and ferro-alloy are tapped into small ladle trucks and dumped in an adjoining shed for cooling and packing. Around the top of each furnace there is a steel floor for charging.

There are six Keller furnaces of the type previously described working on ferro-alloys and three on calcium carbide. The carbide furnaces take from 1,200 to 2,200 kilowatts each, while the ferro-alloy furnaces are from 900 to 1,000 kilowatts capacity, making a total of about 6,000 kilowatts being used in ferro-alloy production. The furnaces directly connected to the single-phase generators receive current at 50 volts at the furnace. The furnaces on the three-phase circuit have a single-phase transformer to each furnace as shown in Fig. 7, so that the voltage varies from 50 to 70 volts at the furnace.

Three grades of ferro-silicon, containing 25, 50, and 75 per cent silicon, are manufactured at these works. The charge consists of iron turnings, quartzite, and anthracite coal. Only iron turnings containing less than 0.10 per cent phosphorus are used to obtain the iron. The cost of turnings at Livet is about $14 per ton. The quartzite is ground and contains 94 to 96 per cent $SiO_2$, with some phosphorus. Sand is not used to supply the silicon at this plant as it appears to cause irregular operation of the furnaces. For a reducing agent, anthracite coal containing 7 per cent ash, 0.013 per cent phosphorus, and 0.41 per cent sulphur is used. The materials are weighed and thoroughly mixed before being charged. About 500 pounds of 30 per cent alloy is tapped every 2 hours. The 30 per cent ferro-silicon requires 3,500 kilowatt-hours per ton, and the 50 per cent alloy 6,800 kilowatt-hours per ton. After the slag has been tapped into a truck ladle it is skimmed from the metal by means of a green log placed crosswise on a wooden handle. The molds are lined with sand. After having been allowed to cool the ferro-silicon is broken up with a hammer and packed into wooden kegs.

Ferro-chrome of all grades is manufactured at Livet. The raw materials used consist of chromite ore containing 35 to 40 per cent chromium, with traces of phosphorus and sulphur, and anthracite coal as a reducing material.

Other ferro-alloys made are silicon-manganese, ferro-tungsten, ferro-titanium, and ferro-vanadium. The total yearly production of the Keller works consists of about 1,500 tons of 25 to 30 per cent ferro-silicon, 3,000 tons of 50 per cent ferro-silicon, 6,000 tons of ferro-chrome, 1,500 tons of silicon-manganese, 6,000 tons of calcium carbide, and smaller quantities of the higher priced ferro-alloys.

### *Societe Electro-Metallurgique Procedes Paul Girod, Ugine, Savoie, France*

In 1898, Girod began the experimental work on the manufacture of ferro-alloys with the electric furnace at Albertville, Savoie, France, with a small 20-kilowatt furnace. In 1899 he opened at Albertville a small works of 38-kilowatt capacity. Later in the same year the erection of a larger plant was begun at that place. The

Albertville plant had a capacity of 750 to 950 kilowatts, and consisted of 5 furnaces, each taking 150 to 200 kilowatts. The plant has since been dismantled and the equipment moved to Ugine.

In 1903, the construction of new works was begun at Courtepin, Switzerland. The plant uses 2,250 kilowatts of 25-cycle three-phase current, which is delivered at 32,000 volts and stepped down to 50 to 75 volts at the works. The furnaces at Courtepin are used almost entirely in the production of ferro-silicon containing 25 to 30 per cent, 50 per cent, 75 per cent and 95 per cent silicon.

In June, 1903, the present company was organized with a capitalization of $360,000 which has been increased to $2,400,000, of which $1,000,000 is in bonds. In 1903 the works at Ugine were erected. In addition to the works mentioned, there is a power plant at St. Gervais, Switzerland.

Ugine is situated on a branch line of the Paris, Lyon & Marseilles railway between Annecy and Albertville. The works are about three-quarters of a mile from the main line, with which connection is made by an electric tramway for freight haulage, which is operated by the Girod Co. The buildings are all on the north bank of the Arly river.

The total capacity of all of the Girod power plants is about 28,000 kilowatts. There is a possible development of 30,000 kilowatts more, a total of 58,000 kilowatts. The average cost of power from all sources is about $18.66 per kilowatt-year, or 0.21 cent per kilowatt-hour.

A short distance up the Arly river from the plant is the dam of one of the power plants of the Girod Co. The water is led directly to the plant by a pipe line, the total fall being 416 feet. Ten dynamos, driven by 10 Pelton wheels, generate 6,000 to 7,000 kilowatts of single-phase current, which is conducted directly to the furnaces in the old furnace house.

At La Fayet, also on the Arly river, at a considerable distance from Ugine, 9,000 to 15,000 kilowatts of three-phase current is developed. This is transformed at the works from 45,000 to 50 or 75 volts for the furnaces and 2,500 volts for conversion to direct current. About 4,500 kilowatts of three-phase current is obtained from a plant at St. Gervais, Switzerland, on the Bonnart river. To supply a deficiency during the low-water months, from Oct. 1 to April 1, 6,000 to 7,500 kilowatts, all three-phase at 4,500 volts, is leased from another electro-metallurgical company at Veuthin.

The present capacity of the two Girod power plants on the Arly river that supply the Ugine plant is about 24,000 kilowatts. For four months, from October to February, and sometimes to April, the current delivered is reduced to about 12,000 kilowatts when leased power is used. All of the power developed by the Girod plants, except about 6,000 kilowatts that supplies the electric steel works, is used in ferro-alloy making.

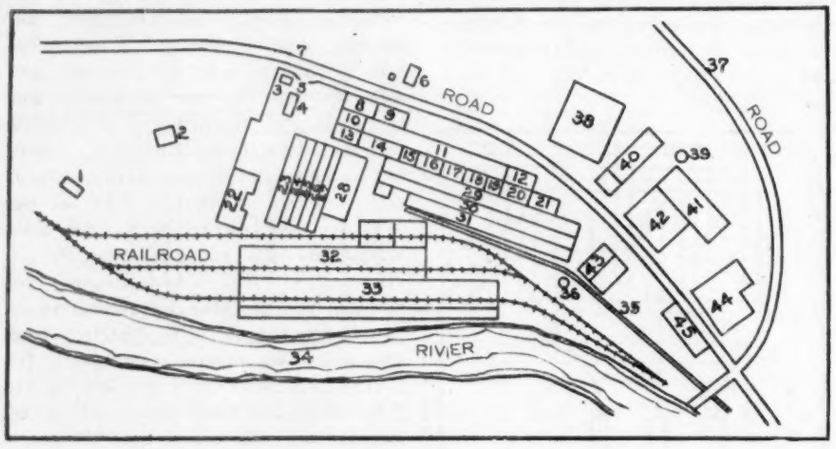



FIG. 9—PLAN OF GIROD FERRO-ALLOY PLANT

1, garage; 2, villa; 3, porter's lodge; 4, dwelling house; 5, portal; 6, dwelling house; 7, road; 8, fitting and tinsmith shop, 75 x 25 feet; 9, metal-sorting shop, 75 x 25 feet; 10, laborers' dining hall; 11, raw-materials storeroom, 285 x 40 feet; 12, workshop, 60 x 40 feet; 13, dining room; 14, lavatories; 15, foremen's office; 16, packing shop, 60 x 40 feet; 17, hammer with falling weight of 220 pounds; 18, foremen's office; 19, snop for fitting up electrodes; 20, repairing shop; 21, workshop for preparation of graphite; 22, general office; 23, transformer house, 175 x 25 feet; 24, furnace house, 160 x 25 feet; 25, covered yard, 160 x 25 feet; 26, furnace house, 160 x 25 feet; 27, transformer house, 160 x 25 feet; 28, ferro-alloys store house, 130 x 50 feet; 29, covered yard, 440 x 30 feet; 30, old furnace house, 440 x 30 feet; 31, power house, 360 x 40 feet; 32, stock shed, 360 x 50 feet; 33, raw-materials storehouse, new smelting works, 520 x 75 feet; 34, Arly River; 35, conduit pipe; 36, chimney, 125 feet high; 37, road to Ugine; 38, graphite and carbon storehouse, 150 x 100 feet; 39, chimney; 40, electrode storehouse, 170 x 40 feet; 41, furnace house for electrode manufacture, 170 x 40 feet; 42, electrode presses, etc., 110 x 75 feet; 43, sawmill; 44, graphite storehouse; 45, dwelling house.

The works cover about 500,000 square feet, including the electrode department, which is operated in conjunction with the ferro-alloy plant. The general layout of the plant is shown in Fig. 9.

The old furnace building is of stone construction, 440 feet long, 30 feet wide, and 18 feet high. The power house runs parallel to it, with a wall between the furnaces and the generators, so that a furnace is not more than 20 feet from the generator. The ends of the furnace building are open, with an open ventilation on the top for the length of the building. Adjoining the furnace building on the side away from the furnaces is an open shed into which the finished products are dumped to cool. Ore, sand, and coal are weighed and mixed on the floor, from which they are shoveled into the furnace tops.

The furnaces in the old works are chiefly used for the manufacture of the higher-priced alloys. There are 18 furnaces, ranging in size from 150 to 560 kilowatts capacity each. Both crucible and electrode furnaces are installed. The furnaces, about 6 feet apart, are set along one wall, with the wheel for hand regulation of electrodes, as well as the electrical instruments, on the opposite wall. The electrodes are suspended by cables running over blocks on the steel trusses of the roof.

At the new works the raw materials are unloaded from the railway cars into the open raw-material shed. An electromagnet crane is used in unloading iron turnings. The ores are then carried in small electrically hauled cars to the new furnace house, where they are elevated to bins above the furnaces. Weighing, mixing, and charging are done here from a floor at the level of the furnace top, considerable labor being thus saved over that necessary at the old plant.

The transformers for three-phase current are set in rooms parallel to each furnace house. The furnaces are set close to the dividing wall. Beyond the other wall of the furnace house is an open shed, into which the hot products are dumped. The furnaces in the new works are all of the electrode type, taking 375 to 900 kilowatts. The electrodes are supported by cables running to the steel framework over the furnaces. Regulation is by hand as in the majority of ferro-alloy furnaces.

The Girod company employs 400 to 500 men in the production of ferro-alloys, the yearly value of which is between $2,000,000 and $3,000,000. The quantity produced varies considerably from year to year, but the production

(*Continued on page 742.*)

# Major and Minor Patents Proposed

BY S. E. HITT

I HAVE read with interest the article by L. W. Moffett in your issue of March 18. Most of the reforms referred to as embodied in the new law are probably to be commended and are really the result of long experience of the various interests concerned. But don't you think that the fundamental idea of the patent itself should receive more careful analysis and that we should develop that fundamental idea into something more in keeping with the industrial development of the present day?

The manufacturer will say that a patent is either good or worthless; an attorney would probably say, broad or specific, referring to detail patents. The generally accepted opinion is that the value of a patent depends almost entirely upon the claims, but good, bad or indifferent, the patent office puts them all through the same mill and lets them all go to issue for the same fee.

I would like to suggest, in reorganizing the patent office, that patents be issued as major patents or minor patents.

The minor patents could be handled in the patent office by the present system for a $35 fee as at present and the major patents given to the most competent and high salaried men, the government fee being, say, $100.

An inventor could then apply directly for a major patent or for a minor patent and if the references cited showed that he had a new field, he could then apply for advancement to the major class, paying the difference of $65, or the full fee of $100 as the law required. The inventor would be asking for a good or broad patent, and would be paying a fee that would enable the patent office to do him justice. Should a number of manufacturers hold minor patents which clearly interfered with a major patent, the royalties due the latter could be fixed by law as a certain per cent of gross sales, or otherwise.

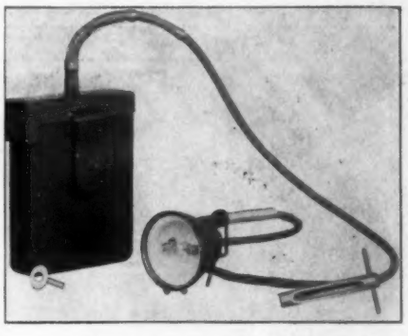
I would even suggest that the minor patents be issued subject to the major patent, if found to interfere. The owner of a minor patent would then know to whom he owed royalties without further process of law and the owner of the major patent could collect his royalties without difficulty.

The major patents would have only broad claims, and the minor patents only detail claims, so that the inventor and manufacturer alike would have something of more definite value than the present patent.

## Miner's Electric Lamp

The General Electric Co., Schenectady, N. Y., is offering a new miner's electric lamp that is said to be entirely safe to use, of strong construction yet light in weight and simple in design. The outfit consists essentially of a lead plate battery, carried on the belt; a ¾-candlepower incandescent lamp with a suitable reflector held in a steel shell carried on the cap and a strong, serviceable cable connecting the battery and the lamp. By adequate insulation of the entire electric circuit, placing all the terminals and contacts inside of locked and sealed steel cases and providing automatic means for extinguishing instantly the glow of the filament, should breakage of the lamp bulb expose it to the air, this lamp, it is believed has been made both safe and rugged. The outfit complete weighs 3¾ pounds, of which 3½ pounds are carried on the belt and 4 ounces on the cap. The battery is rated at 7.2 ampere-hours. Normally it will light the lamp 12 hours on one charge and can, it is said, be relied on to furnish light for at least 10¾ hours per charge at the end of one year's service. The ¾-candle power Mazda lamp operates at 1.9 volts and the reflector distributes the light evenly through a solid angle of about 130 degrees.

The battery is of the non-spilling type and the terminals are not subject to acid corrosion. The case is of medium hard rubber. Exide plates are used. The battery box measures 6¼ inches high, 5 inches wide and two inches thick overall. It is made of drawn sheet steel, electrically welded, including the two side straps for the miner's belt. After welding, the box is lead plated and painted with acid-proof paint. The cover is drawn steel, hinged at one end and



ELECTRIC LAMP FOR MINERS

fitted with a substantial lock at the other end. The terminal contact block is riveted to the inside of the cover. Connection to the battery terminals is made by strong spring contacts, arranged to close the circuit when the cover is shut. The cable entrance bushing is watertight and clamps the cable firmly to prevent strain on the terminals.

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The Waterhouse Welding Co., Boston, Mass., has issued literature covering equipment for oxy-acetylene welding and cutting. Two booklets have been printed. One shows a number of typical repair jobs on automobiles and other classes of machinery, and the other describes and illustrates welding and cutting torches, tanks, fluxes, etc.

## Address on Efficiency

F. E. Morton, efficiency engineer, American Steel & Wire Co., Chicago, recently gave an address on the efficiency work of the Steel Corporation before the Joliet Rotary club, Joliet, Ill. In conclusion Mr. Morton said: "It readily will be admitted by the executive that the co-operation of his employes and the co-ordination of all working units is essential to the proper carrying out of his industrial plan. In fact, the perfection of anything is determined by the co-operation of all its parts toward the attainment of its end.

"Let us now arise to a still greater mental height and apply this principle to the combined industries of our country. The co-operation of executives, or captains of industry, and the co-ordination of their functions become necessary to the continuity of service which we term prosperity. Failure to co-operate expresses itself as destructive competition. Failure to co-ordinate is expressed as diseased tissue in the body politic. The industrial test of right and wrong is continuity. That is right which may always continue. Constructive effort knows no limit save ability."

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Fine grinding can be done with a coarse-grain wheel under the proper conditions; in the same way a fine wheel may produce rough work. Many of the scratches which appear on the ground work are made by small particles of metal between the wheel and the work. Good grinding demands conditions which allow these particles to escape.

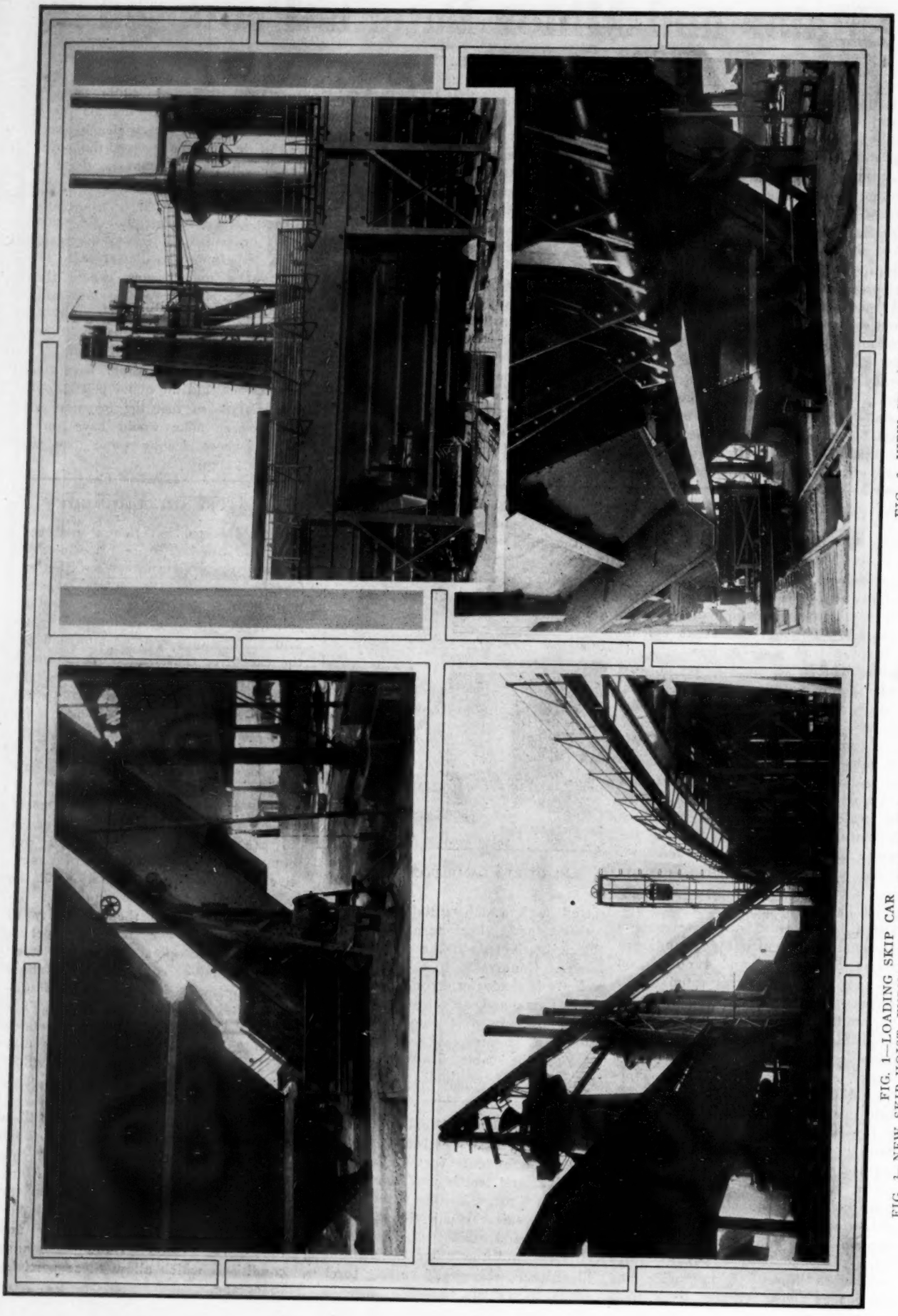

FIG. 1—LOADING SKIP CAR
FIG. 2—VIEW SHOWING COKE BIN AND SKIP PIT
FIG. 3—NEW SKIP HOIST, FURNACE TOP AND TRESTLE
FIG. 4—SCALE CAR UNDER STORAGE BINS

# Furnace Improvements at Jackson

## Reconstruction Work at Plant of Jackson Iron & Steel Co. Including New Skip Hoist, Furnace Top, Bins and Trestle

RECENT extensive improvements made at the blast furnace of the Jackson Iron & Steel Co., Jackson, O., include the installation of new steel storage bins and a storage trestle, a single track skip bridge, a scale car, a new top for the furnace, and a locomotive crane.

The storage trestle, as shown in Fig. 3, is single track, with steel stringers resting on steel bents spaced on 27-foot centers. The bents were designed to carry the entire load. They are encased in concrete, which forms the partition walls between the bins, and serves to prevent corrosion of the steel work.

The storage trestle is designed for two engines, each weighing 195¼ tons, followed by a load of 5,500 pounds per foot. It has a grade of 0.5 per cent. The approach trestle to the bins, which is approximately the same design as the storage trestle, has a 2 per cent grade. A switch with a second track leads to the coke bin. Ties are used under the rails in the three panels extending from the switch point to the frog. The rails rest directly on the stringers throughout the balance of the structure. The ore, stone and coal bins, as shown in Figs. 1 and 4, are all designed alike, so that they can be used interchangeably if necessary. There are five panels of these bins north of the coke bin and four panels south of it, the coke bin being opposite the furnace. Each bin is 12 feet long, 15 feet wide, and about 26 feet 6 inches from the stock house floor level to the rail. Each bin will hold approximately 145 tons of ore. The slope of the bottom of the bins is 55 degrees with the horizontal. In each bin there are three pairs of gates, each gate giving an opening 1½ feet square. By operating one pair of gates an opening 3 x 1½ feet is provided. The scale car runs under these bins and the gates can be operated from the scale car by hand. The gates are weighted so that they open easily, and as they open, the face of the gate plate moves away from the ore. An attachment is provided by which the handle may be moved through a small space without moving the gate, so that when the handle starts the gate, the latter moves suddenly.

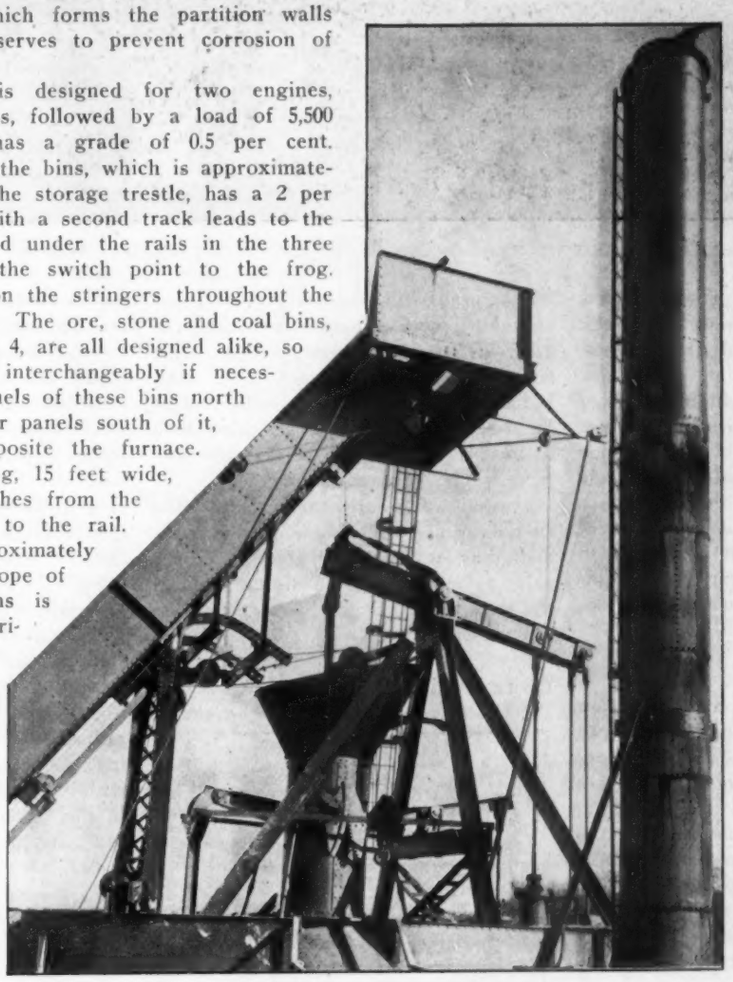

FIG. 5—FURNACE TOP SHOWING ARRANGEMENT FOR HANDLING THE CHARGE

The scale car shown in Fig. 4 was built by the Atlas Car & Mfg. Co., Cleveland, and has a capacity of 85 cubic feet. It is equipped with Fairbanks scales, six weigh beams and one tare beam, with a total capacity of 12,000 pounds. It is provided with a Westinghouse mining type motor, with standard drum controller and resistance. This car can be operated by one man as the operating machinery is conveniently arranged. The scale beams and fingers, controller, car brake, lever for operating the scale car doors and the lever for the ore bins, are all located within easy reach of the operator.

The coke bin is a double track type, 40 feet long, 32 feet wide and 26½ feet high. The slope of the bottom of this bin is 52 degrees 30 minutes with the horizontal. There are three walkways, one between the tracks, the other two being outside the tracks, each of the latter being provided with a railing 4 feet high. This railing serves to hold the coke when being unloaded with a fork from a box car.

The gate for this bin gives an opening 2½ feet wide and 2 feet high. It is operated on approximately the same principle as the ore bin gates. The coke, when released by opening the gate, runs down a chute, the bottom of which is a plate, in which are a large number of ½-inch holes. The coke dust flowing through these holes falls into a dust chute, which carries the dust into the skip pit, where it can be easily removed. The discharge spout from the coke bin discharges the coke into the hopper, in the same manner as the scale car. This hopper discharges the ore and coke directly into the skip car. The skip pit is built of concrete, reinforced with steel bars, the walls and bottom being waterproofed. It extends 6 feet beyond the coke bin, enabling the bucket from the locomotive crane to be dropped into the pit and pick up the coke screenings and load them on a car. The skip bridge shown in Fig. 2 is single track and of girder type construction. The skip car has a capacity of 85 cubic feet. The car runs on 100-pound rails, which are carried on cross channels riveted to the skip girders. On one side of the hoist a stairway is provided from the stock house level to the furnace top. The bridge is carried on an frame 30 feet from the furnace and on a pair of steel columns at the top of the furnace. These latter columns are pin connected to avoid side thrust against the furnace shell. There is an apron plate underneath the skip bridge throughout its entire length to catch any material which may drop from the skip car.

The hoisting engine which the Jackson Iron & Steel Co. had been using was employed in the new construction. It was

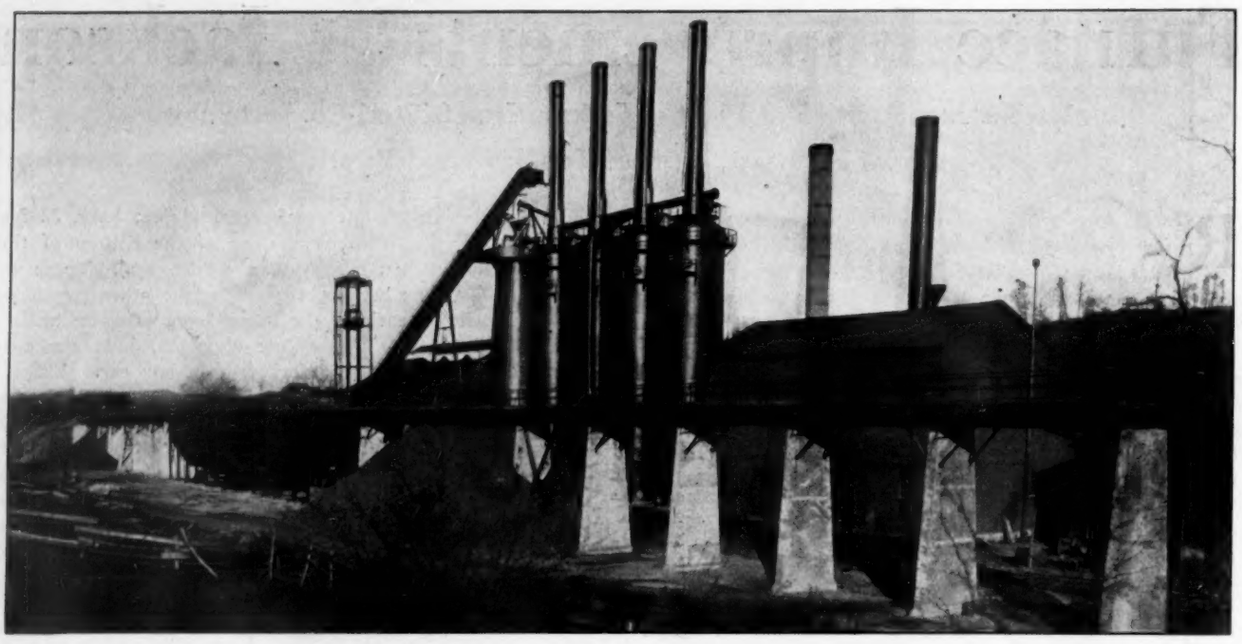

FIG. 6—GENERAL VIEW OF REMODELED PLANT OF THE JACKSON IRON & STEEL CO.

necessary, however, to provide a new drum and shaft, a new automatic slow-down and terminal stop device, and to move the engine to a new location. Part of the old hoist tower was used as a tower for the counterweight for the new skip car. This counterweight consists of a box made of steel plates, filled with pig iron to the proper weight. This arrangement allows sufficient ore for a charge to be carried in one skip car, and simplifies the filling of the furnace.

*Furnace Top*

The new furnace top, as shown in Fig. 8, consists of a conical dumping hopper, which guides the charge into the receiving hopper. The latter is 3 feet 9 inches in diameter and 7 feet high. The capacity of the receiving hopper approximates that of the skip car. The hopper is long and narrow in order to insure proper distribution of the stock. The receiving hopper, as well as the dumping hopper, is lined with ½-inch wearing plates. The receiving hopper rests on a cast steel gas seal in four parts, any two of which may be taken out without disturbing the hopper.

Hung from the top of the gas seal and making the bottom of the receiving hopper is an orange peel valve in four segments. This is operated by a system of levers from outside the gas seal in order to leave the top surface of the valve absolutely plain. This valve is operated by a 10-inch steam cylinder, 20-inch stroke, at one end of a bell crane. At the other end is a curved member which encircles one half of the receiving hopper, and at the ends of this curved member are cast steel gears which mesh with a similar set of gears on another curved member encircling the other half of the receiving hopper. This latter member is connected to a short bell crane having the same lever arm as the large one. These gears cause each of the bell cranes to move the same distance. The four rods for moving the segmental valve are connected to the curved members at the 45-degree points and thus cause the segments of the valve to move the same distance and at the same time. The valve segments are heavy steel castings.

The gas seal rests upon a bell hopper having an inside diameter of 10 feet.

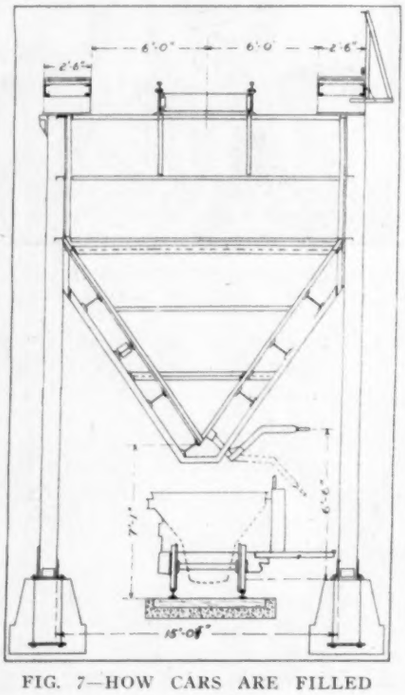


FIG. 7—HOW CARS ARE FILLED

At the bottom of this hopper is hung the lip ring. The large bell is hung from a 3-inch bell rod, which is protected for its full length by cast steel thimbles. The bell is operated by a steam cylinder 14 inches in diameter, 34 inches stroke. The bell hopper rests on cast steel brackets which are riveted to the old shell. It was necessary to put an extension of approximately 20 feet on the bleeder, in order to carry the top of the bleeder above the top of the new skip bridge.

At the top of the skip girders are the sheaves over which the ropes for operating the skip car run. Around the top of this skip girder is a platform, with railings, so as to provide for easy oiling of the sheaves. There is a ladder, with safety cage, from the furnace top to this platform. A derrick is provided for handling any piece of the furnace top.

A mechanical test rod is provided which connects through a tiller rope with an indicator placed at the stock house level near the skip pit. There are also three holes for hand test rods. Indicators are provided at the stock house level for showing the position of the orange peel valve and the large bell.

*Ease of Operation*

At the side of the skip pit, the operating mechanism is placed so that one man may operate the coke bin gate, mechanical test rod, hoisting engine, large bell and orange peel valve. These are arranged so that they are within easy reach of the operator. The coke bin gate is connected by a series of levers so as to throw the operating lever at the side of the skip pit. The hoisting engine is operated by a tiller wheel and

tiller rope running from the operator's position to the engine house. The cylinders which move the large bell and orange peel valve are operated by four-way valves, these valves having counterweighted levers to which are connected tiller ropes leading to levers at the operator's position below. These levers are provided with stops, and through counterweights at the furnace top, neither the orange peel valve nor the large bell can be left in the open position without the operator holding down the levers.

A 35-kilowatt, 220-volt Westinghouse turbine-driven generator, together with switch board and all the necessary wiring, poles, hangers, etc., is provided. A 15-ton Ohio locomotive crane equipped with a 40-foot boom and a clam shell bucket of one yard capacity was installed.

The Jackson blast furnace blew in January 27. The stack can be filled with two men on a turn, one operating the scale car and the other running the skip car, opening the bells and operating the coke gate. Before making the improvements 20 men per turn were required in the stock house and on top of the furnace. The improvements thus have saved the company 18 men per turn and also have made possible a larger and more uniform output.

The general contract for all the improvements was let to the Mt. Vernon Bridge Co., Mt. Vernon, O., which designed and executed the work. Frank Amsden, who at that time was general superintendent of the Jackson Iron & Steel Co., assisted in the design, and Frank C. Roberts & Co., Philadelphia, checked over and approved the plans for the furnace top and skip bridge.

The officers of the Jackson Iron & Steel Co. are: Simon Labold, president; D. D. Davis, vice president; J. F. Morgan, secretary and treasurer.

## A. S. M. E. Meeting

The American Society of Mechanical Engineers will hold a meeting in San Francisco Sept. 16 and 17, just previous to the International Engineering Congress. For the benefit of those who will attend, a special train schedule will be arranged over the Southern Pacific. It is planned to pick up members who start from the middle west or south at New Orleans. According to the schedule arranged at present, the party will leave New York either Thursday evening, Sept. 9, or Friday evening, Sept. 10. Stops will be made at Niagara Falls, the Grand Canyon and possibly Colorado Springs. The Hotel Cliff, San Francisco, has been selected as the headquarters of the society during the meeting.

## Use of Colored Glasses

The following extracts are from a paper read by Frederick W. King, F. W. King Optical Co., Cleveland, entitled "Report on Colored Glasses for Eye Protection":

"The ultra violet rays in welding are injurious as they destroy animal tissue. They occur, in a dangerous volume, at a temperature of over 2,000 degrees Fahr. in molten iron or steel and greatly increase in proportion as the temperature is increased. At 6,400 degrees, encountered in electric carbon arc welding, they will probably cause permanent blindness within three minutes, if the eye is not protected.

"Many of the colored glasses used today for the above purpose, are not only scientifically incorrect, but are, in most cases, decidedly injurious.

"Smoked glass is by no means the only inefficient color used in oxy-acetylene welding. In many cases blue is used. This is wrong, as it allows the very rays to enter the eye that it is necessary to cut out. Besides this it is too dark and cuts out too much of the non-injurious light. The new color, known as the Saniweld, eliminates all of the ultra violet, the violet and the blue. It also reduces the infra red which, by its excessive energy, is the principal cause of eye fatigue. In tone the new glass is a sort of brownish orange and in its darker form enables one to look directly at the sun at midday without experiencing any discomfort.

"The first objection the men bring forward is that the glasses are too light in color. This is the best point from even their own view because, if all the ultra violet rays are eliminated, the remaining portion of the spectrum does not have to be anywhere nearly as much reduced as with the dark glasses they have been using, and as a consequence they can see to walk about with correct lenses and follow a chalk line in cutting that they were never able to do before. The personal equation has, in certain cases, to be somewhat considered and if an operator insists upon a darker shade, it can readily be supplied."

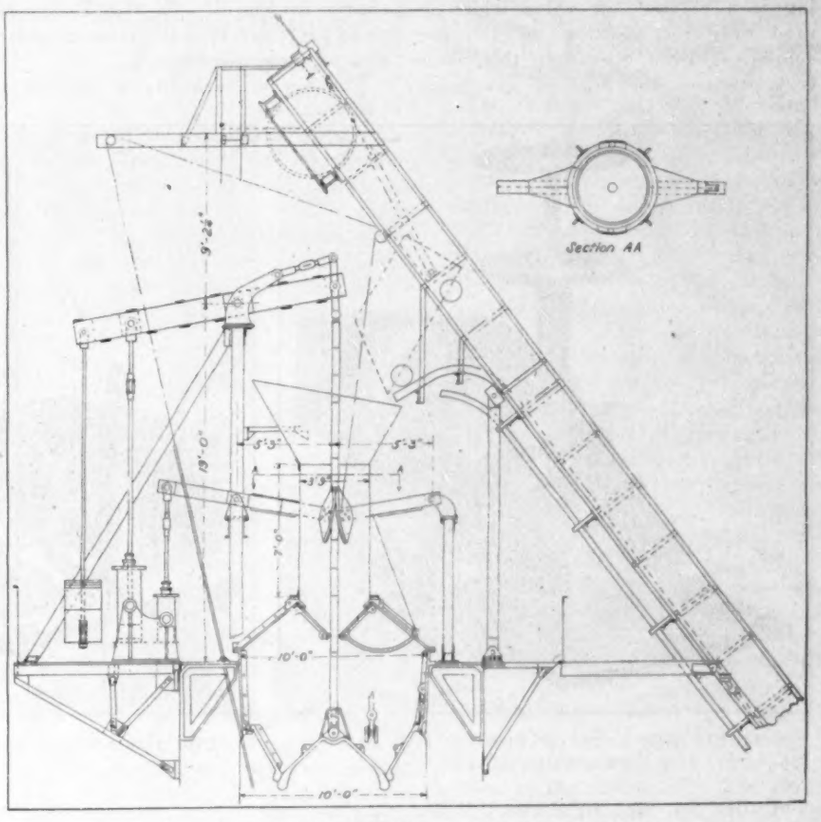


FIG. 8—ARRANGEMENT OF FURNACE TOP

The Terry Steam Turbine Co., Hartford, Conn., announces that since March 22 its Chicago office has been located in the Peoples Gas building, in charge of A. W. de Revere. The Terry company also has opened an office in the Michigan Trust building, Grand Rapids, Mich., in charge of A. L. Searles, to handle business in the southern part of Michigan.

## Producer Gas Burner

An improved type of burner for raw producer gas is being offered by the Flinn & Dreffein Co., 431 South Dearborn street, Chicago. It is designed to use gas direct from the producer without removing tar and other by-products. The presence of these products has made it difficult to design a burner which would not clog.

The burner consists of three essential parts, the burner body, air nozzle and combustion tube. The burner body resembles a large cast iron elbow with a pedestal base resting on the flue which conveys gas to the furnace. In the bottom of the casting is a vertical lift valve which is used only for shutting off the gas supply. During operation, this valve is kept open, the flow of gas being controlled by the air nozzle. When the burner has been shut off, tar solidifies around the valve seat, making it difficult to open by a circular motion. The valve is a tapered disc closing against a knife-edged seat. Opening the valve when sealed by the solidified tar, is accomplished by two wheels. The lower wheel is raised from its seat and pressure or a slight blow on the valve stem loosens the contact.

Raw gas cannot be regulated by means of a throttle as this produces an accumulation of tar. In this burner the flow is regulated by manipulating the air nozzle, which furnishes air for combustion and also draws gas from the flue by induction. The design of the nozzle permits varying inducing effects to be obtained without changing in any degree the volume of the air supply. The combustion tube is built into the wall of the furnace. It consists of highly refractory tile with the inside passage designed to give high inducing effects in combination with the air nozzle. In this tube, initial combustion of air and gas takes place and the particles of tar, always present in raw gas, are brought to a temperature where they are entirely gasified, and mix rapidly with air in combustion.

Hand-holes are provided for cleaning the burner while in operation and virtually no attention is needed except the adjustment necessary for furnace regulation. The burner assembled is shown in Fig. 1. In Fig. 2 the various parts are shown, giving an exact idea of construction.

The burner is available for use in any furnace where raw gas can be used, from the largest size down to heating furnaces of 1 cubic foot capacity.

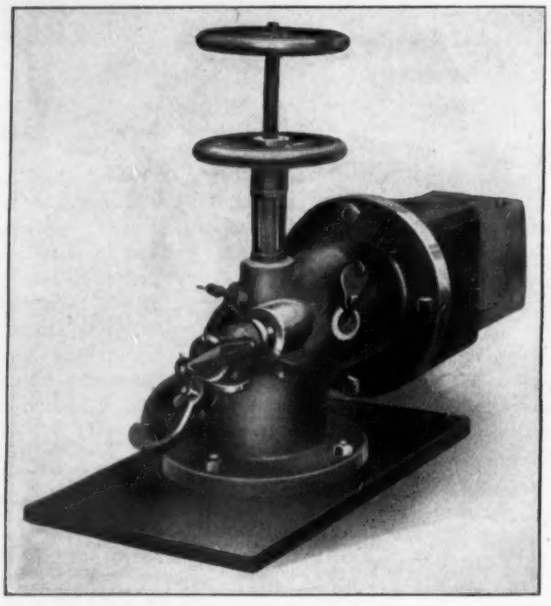

FIG. 1—NEW TYPE OF BURNER FOR RAW PRODUCER GAS

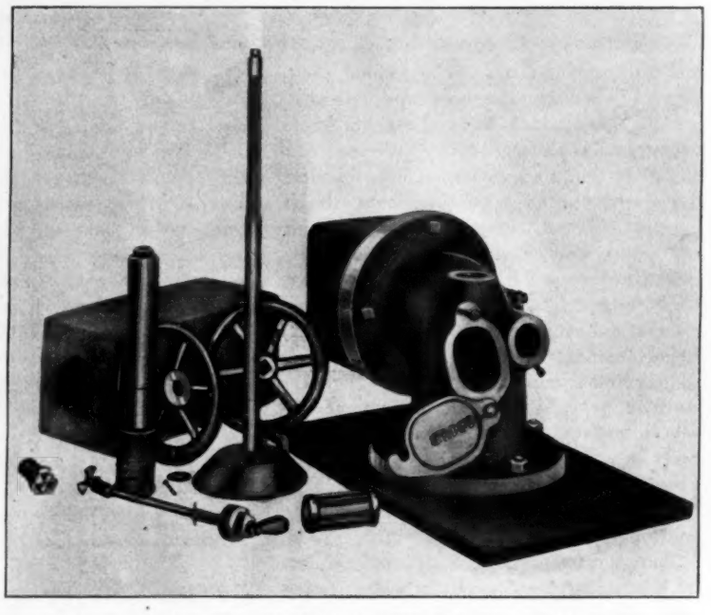

FIG. 2—VIEW SHOWING COMPONENT PARTS OF BURNER

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The fourth year book of the American Iron and Steel Institute has been issued by the secretary, James T. McCleary, 30 Church street, New York. Like its predecessors, it contains a complete record of the proceedings of the institute for the past year, including the May meeting at New York and the October meeting in Birmingham, Ala. The book is now being distributed to the members of the institute.

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Speed is one of the most important factors in grinding. Don't forget that the cutting speed decreases as the wheel wears down.

## Belt Efficiency

An exceedingly interesting eight-page folder has been issued by the Gripwell Pulley Covering Co., 601 Candler building, New York, describing the results arising from the use of the liquid pulley covering manufactured by this company. This covering is applied to pulleys with an ordinary brush and takes the place of belt dressing. Illustrations are presented showing belts in service. Prices and other information of interest to belt users also are given.

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The seventh edition of "How to Build Up Furnace Efficiency", by Joseph W. Hays, combustion engineer, has just been issued, bringing this work down to date. This is a small volume condensing into comparatively few pages a great deal of valuable information which the author has gathered in his study of chemistry of combustion on which he has written at greater length elsewhere. Copies may be obtained from G. L. Simonds & Co., 230 South La Salle street, Chicago, at $1 for single copies postpaid and a lower rate on quantities.

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The Sprague Electric Works, of the General Electric Co., New York City, has established a branch sales office in the Illuminating building, Cleveland, in charge of Frank H. Hill, who likewise is manager of the Pittsburgh office of this company.

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Every grinding wheel used at all regularly should have an exhaust hood and should be connected to an exhaust system supplied with a suitable fan.

# News of Employers and Employes

## Ohio Manufacturers Supporting an Important Bill—Review of Labor Legislation in the Northwest

The Industrial Association of Cleveland, of which C. O. Bartlett is president and Edward Hobday general counsel, is supporting a bill which amends sections 15 and 21 of the act which created the industrial commission of Ohio. The most important provision of the bill is the following:

"Sec. 871-21.—The industrial commission of Ohio is vested with full power and jurisdiction to have such supervision of every employment and places of employment and of every other building and establishment in this state that may be necessary adequately to enforce and administer all laws and all lawful orders requiring such employment and place of employment or building or establishment, to be safe, and upon the complaint of any person or upon its own initiative after such investigation and hearing or hearings as it may deem advisable, to determine and prescribe what, if any, safety devices, or safeguards or conditions are necessary to make any place or kind of place of employment safe; what hours of employment and periods of continuous employment are reasonable with respect to the health and welfare of the employes engaged therein; and what provisions for light, heat, cleanliness and ventilation are necessary to create and preserve sanitary conditions. In determining all such questions the commission shall, in addition to other things give due consideration to the kind of business the employer is conducting and the amount or degree of physical or mental stress any employment or occupation necessarily imposes upon the employes."

President Bartlett, commenting on this measure, says:

"If this bill passes, it will be unnecessary for the legislature to consider for passage pending legislation having to do with regulation of working conditions or hours of labor. The Archer bill is the most important piece of legislation concerning employers and manufacturers generally, which is now pending before the Ohio legislature. Regulation of hours of labor and working conditions have long been the 'foot-ball' of our legislators. In this industrial era, with its complex conditions, special study and knowledge are required to wisely and properly legislate concerning hours of labor and general working conditions. Regulation should be as scientific as possible and have some intelligent relation not only to different trades and industries, but likewise to special conditions existing therein."

The bill has passed the senate of Ohio and is now pending in the house. An effort will be made to refer it to a fair committee.

### Northwest Labor Legislation

The grist of labor legislation turned out by recent northwest legislatures was not large, but some important measures were enacted. A workmen's compensation law was placed upon the statute books of Montana. The compensation act of Oregon was greatly improved by the adoption of a scale, distributing the expense of state insurance. The amendment is not entirely satisfactory, but is conceded to be a step in the right direction. In Idaho the proposed compensation law was vetoed by the governor on the ground that it exempted payment of liability where accidental death should come to foreign workmen in conducting the industries of the state, thereby causing discrimination against American labor, where the responsibility was sure. The measure was also attacked on the ground that the amount appropriated for administering the act was excessive. The governor of Washington vetoed the bill which sought to abolish the eight-hour day on public work. The proposal to establish state employment agencies died in committee, although State Labor Commissioner E. W. Olson made a special fight to have it adopted. It was opposed by employers on the ground that it simply placed additional burdens on the operators of industrial plants.

#### Anti-Picketing Bill

The United Metal Trades Association of Washington and employers of the state generally are taking considerable satisfaction from the fact that an anti-picketing law was placed upon the statute books. The bill, as first drawn, made the violation of its provisions a gross misdemeanor. The word gross was eliminated from the final draft. The proponents of the measure have strong hopes of its being proof against the referendum which is threatened by the unions. The penal section makes it misdemeanor to parade with a banner or any device, designed to call attention to a labor dispute within 500 feet of any lawful place of business. It also makes it a misdemeanor to cause any other person to do the picketing, thereby reaching those who station the pickets. The public is to be given a full and complete understanding of the act with a view to defeating the referendum.

The attempt of the Washington legislature to place a first aid law in the statutes ended in a failure, the governor attaching his veto to the measure which finally came to him. The unions fathered an initiative measure in the last election, which would have thrown the burden of first aid entirely upon the industries of the state. This was defeated and the governor appointed a commission to formulate a bill for submission to the legislature. Prominent members of the union were appointed on this commission, but refused to serve. The deliberations of the commission ended in a compromise. The cost of the first aid was to be divided equally between the employer and employe. There was to be a six-day waiting period and the industrial insurance commission was to be charged with the duty of administering the fund.

It was soon discovered that the commission bill could not pass. A substitute measure was brought in known as the Kleeb bill. The United Metal Trades Association and the Employers' Association of Washington, believing that great need of first aid law existed, lined up in favor of this bill.

The fundamental difference between the two was in the question of administration. The advocates of the substitute bill claimed that the administration of the fund by the employers was desirable for the reason that the money was kept in the industry while the bond provided was sufficient guarantee that it would remain intact. They also advanced the argument that to permit the industrial insurance commission to handle the fund meant additional expense to the taxpayers of the state who are now paying out $105,000 annually for administration of the workmen's compensation act.

# Frick and Ford

**Proposed as Presidential Candidates for Next Year**

*Editor Iron Trade Review:*

What is wrong with this country of ours? Why are we now passing through the most deplorable trade conditions in its history? Why do we have so many idle men and women? Why so many dead locomotives, empty freight cars, closed mines, smokeless stacks, silent factories and industrial plants?

Some people say the European war is the cause. I say not so. Too much legislation at Washington, too much law making, is the fundamental reason for prevailing conditions.

Stop making laws and get down to business, or we will soon have so many laws that it will be necessary to increase our standing army to enforce them. Conditions as they now exist in America are fast driving this country into a state of anarchy.

We have noted in the past where some congressmen on learning the increased earnings of industrial plants, immediately frame bills to have these profits reduced. Is this sound business logic?

Only a short time ago a certain congressman of Pennsylvania, when running for re-election, used for his campaign arguments figures whereby he tried to prove that the earnings of the leading industrial plant in the district he represented were increasing too rapidly; a policy which did not meet with his approval. Is this the kind of men we want to represent us in congress? A man who for his own selfish gain or petty jealousy would try to tear down the industries he should foster and help to build up.

We are thankful that we are soon to see the last of him politically, and I hope the last of his type. For the more successful the manufacturer the more prosperous the workman; the more prosperous the workman the more flourishing the grocer, the butcher, the landlord, etc.

Oh, for the power to stay the hand of time, so that Carnegie, Rockefeller, Jas. J. Hill and men of their kind might live on forever and continue to enlarge the great industrial monuments they have so ably and successfully built!

Put Blackstone on the shelf and pay more attention to the promotion of business. Encourage tilling the soil, operating the mines, filling the empty freight cars, starting the dead locomotives, putting fire under the boilers and sending smoke out of the stacks, turning the wheels of industry and making the silent mills and factories hum.

Talk business, get business, do business. Make a business man president. Appoint business men for the cabinet. Elect business men to congress. Send business men to the United States senate. Have successful industrial leaders, who know how to do things in a business way, represent us at Washington.

I, for one, endorse a business man for president, and right here let me say that there is none better fitted for that high office than Henry Clay Frick, of Pittsburgh and New York. Mr. Frick having risen by his own efforts, without any push or pull, from the humble position of grocer's clerk to be one of America's greatest captains of industry.

I might go a little further and add what I would consider an ideal ticket for the Republican party to nominate in 1916. Henry Clay Frick for president and Henry Ford, of automobile fame, for vice president. With these captains of industry guiding our ship of state at Washington, we would have no fear of a repetition of the pitiful conditions of idleness and suffering humanity, so prevalent among the American people at the present time. For they are business men who would run the country on safe and sane business principles. We must have confidence to do business and business to restore confidence; the two go hand in in hand.

P. D. MACKEY.

South Bethlehem, Pa.

# Convention

**Of National Metal Trades Association in New York**

The seventeenth annual convention of the National Metal Trades Association will be held at the Hotel Astor, New York, April 14 and 15. The first session will be held Wednesday morning, April 14, when an address of welcome will be delivered by H. N. Covell, president of the New York and New Jersey branch, and reports of officers and committees will be received. At the afternoon session, there will be a report of the committee on prevention of industrial accidents, W. H. Van Dervoort, chairman; a paper on "Co-Operation Work of National Employers' Association Through Conference Boards", by Mangus W. Alexander, General Electric Co., Lynn, Mass.; and an address on "The Highways and Hedges of Many Managers of Men", by Walt S. Goodwin.

The convention banquet will be held Wednesday evening at 7 o'clock and the final session of the convention will be on Thursday morning, when addresses will be made by Walter Drew, commissioner of the National Erectors' Association, and Daniel Davenport, general counsel of the American Anti-Boycott Association. Reports of the convention committees and election of officers will follow.

The speakers at the banquet will be Frederick P. Fish, of Boston, and Alfred W. Martin, of New York City.

The president, Herbert H. Rice, of the Waverley Co., Indianapolis, has been nominated for re-election and will undoubtedly be accorded the unusual honor of being again selected for that position. Nominees for vice presidents are: George Mesta, Mesta Machine Co., Pittsburgh, for first vice president, to succeed L. H. Kittridge, Peerless Motor Car Co., Cleveland, and for second vice president, W. H. VanDervoort, the Root & VanDervoort Engineering Co., East Moline, Ill.

# Big Contract

**For Making Shrapnel Taken by Canadian Car & Foundry Co.**

Toronto, April 6.—As the result of several weeks' negotiations commenced at Petrograd, Russia, by General Manager Butler, of the Canadian Car & Foundry Co., of Montreal and Amherst, N. S., the company has secured from the Russian government a huge contract for the manufacture of shrapnel shells of various caliber. It is understood that the order is practically limited only by the capacity of the company and its sub-contractors to deliver the shells. The company has already sublet in Canada and the United States orders amounting to $35,000,000, and the total value of the contract is estimated at about $80,000,000.

The city of Hamilton, Ont., has secured two important new industries. The Dominion Sheet Metal Co. is being organized, capitalized at $300,000, to make galvanized sheets. A site has been secured and construction will begin very shortly. The bulk of the capital will be supplied by Ohio steel manufacturers and other American interests. A. T. Enlow, of Oshawa, Ont., who has many years' experience in connection with the industry, will be manager. The Franklin Steel Works, of Joliet, Ill., has decided to establish a branch plant in Hamilton for the manufacture of toe calks for horseshoes. Incorporation has been applied for with a capital of $40,000; a building has been leased and machinery ordered. W. F. Pitcher, of Joliet, Ill., will be treasurer and manager.

# Elaborate

**System of Safeguards Devised by the British Government**

In its effort to prevent exports of ferro-alloys and various ores shipped from its territory, falling into the hands of its enemies, the British government has worked out a rather elaborate system of safeguards in requiring written guarantees from the recipients as to the final destination of the material and the steel that is made from it. A special form of guarantee has been prepared for the United States, which must be signed and delivered by the consumers to agents of the British government in New York, before the material finally is distributed to them. This is the course of procedure which is being followed in the case of ferro-manganese, shipments of which now are coming forward. A specially appointed agent of the British government at New York is taking up these guarantees as shipments arrive and will supervise the distribution. This pledge not to export the original material or the steel made from it is required to be given by consumers in addition to several written guarantees subscribing to the same conditions previously given to the enemy trading committee of the British government. A similar form of procedure is being used for chrome, ferro-chrome, chrome ore, spiegeleisen, ferro-manganese, manganese, manganese ore, tungsten, ferro-tungsten, molybdenum, ferro-molybdenum, molybdenite, wolframite, scheelite, vanadium, ferro-vanadium, nickel and ferro-nickel.

The standard form of guarantee for ferro-alloys and ores made out to apply to ferro-manganese, is as follows:

GUARANTEE.

To (a) .....

.....

In consideration of your consenting to the delivery to us of (amount) tons of ferro manganese from (port of shipment), we (company giving guarantee) hereby give you the following undertaking, which shall remain in force so long as the present war continues:

1. We will not export from the United States any of the said ferro manganese or any other ferro manganese which is now or at any other time in our possession, whether the same has been obtained from the British possessions or elsewhere.

2. The said ferro manganese will be consumed in our own factories in the United States.

3. We will not export from the United States any steel in the manufacture of which the said ferro manganese has been employed to any place in Europe other than the United Kingdom, France, or Russia.

4. We will not sell to any person in the United States any steel in the manufacture of which the said ferro manganese has been employed without obtaining from him a written undertaking that the same is not to be exported from the United States, and satisfying ourselves that he will carry out such undertaking.

5. We will give notice to His Britannic Majesty's consul-general at New York of any shipment of (ferro manganese made from imported ores covered by guarantee) or steel in the manufacture of which the said ferro manganese has been employed to any foreign destination elsewhere than in Europe.

The document is addressed to "The Right Hon. Runciman, President of the Board of Trade", if the export is from the United Kingdom; to "the Right Hon. L. Harcourt, Secretary of State for the Colonies", if the export is from a British possession; or to "the Most Noble the Marquess of Crewe, K. G., Secretary of State for India", if the export is from India.

## Approve New Boiler Code

The boiler specifications adopted recently by the American Society of Mechanical Engineers were approved last week at a meeting of the American Boiler Manufacturers' Association and the National Tubular Boiler Association. These organizations had appointed a committee to work in conjunction with the special committee of the Mechanical Engineers in preparing standard specifications for boiler manufacturers. The committee's report was unanimously adopted and the boiler associations are urging their members to support the specifications in every manner. The endorsement of these societies puts back of the new specifications practically the entire boiler manufacturing industry of the country.

The Ohio board of boiler rules is sending out notices to boiler manufacturers, as well as general and special inspectors, notifying them that inspectors are authorized to approve boilers constructed in accordance with the specifications adopted by the American Society of Mechanical Engineers. This is the first state board to give official sanction to the new specifications.

## Kempsmith Company Entertains

On Tuesday evening, March 30, the Kempsmith Mfg. Co., Milwaukee, Wis., manufacturer of milling machines, had as its guests about 25 members of its executive and clerical force at a dinner given at the Hotel Blatz. A. F. Sheldon, of Chicago, was the principal speaker of the evening, giving one of his characteristic talks on "Human Efficiency." A series of similar meetings has been planned by the company for the purpose of bringing heads of departments into closer touch with each other, thereby promoting efficiency and co-operation. Paul E. Thomas is general manager of the Kempsmith company.

## Remodeling Bessemer Plant

Recent contracts for new construction in the Birmingham district awarded by the United States Cast Iron Pipe & Foundry Co., it is advised by the company, are for the remodeling of its shop at Bessemer. This work involves the removal of certain portions of obsolete structures which are to be replaced by new buildings and by some additions. Some of the work will be done by the company itself and the remainder has been contracted for.

## Plans Manganese Steel Works

A new plant for the manufacture of manganese steel is to be erected at Meriden, Conn., by the Pan-American Reduction Co., a $6,000,000 corporation recently chartered in New York state with headquarters at 140 Broadway, New York City. The company advises that while it is true it has acquired a tract of land and plans to proceed with the building of a plant, it is not able to give out the details of the undertaking at this time.

The Perfection Twolock Nut Co., Box 654, Sacramento, Cal., which controls the license to manufacture a new two-lock nut device in the United States, would like to get in touch with nut manufacturers with a view to making contracts for the production of this nut. Orders will be placed in lots of from 50,000 to 100,000, according to sizes. Frank Smith is general manager of the Perfection company.

The Superior Steel Co., Carnegie, Pa., manufacturer of hot and cold rolled strip steel products, is now represented at Chicago by the Steel Sales Corporation, Jefferson and Adams streets.

The offices of Trimble, Mudge & Co., Pittsburgh, iron and steel merchants, have been moved from the Frick building to 1332 to 1334 Oliver building.

No. 2 blast furnace stack of Andrews & Hitchcock Iron Co., Youngstown, at Hubbard, O., will be ready for the torch about May 1. The stack has been completely rebuilt.

# Money and Iron: Fact and Comment

## Cheerful Atmosphere Prevails at Washington

### Great Totals of Balance of Trade in Favor of the United States—Large Quantities of Gold Still Coming to This Country—Industrial Stocks Advance

Washington, April 6.—With great quantities of money returning to this country from abroad, excess of gold imports for February having been $11,000,000, and the treasury showing a gain of $13,000,000 in gold coin on April 1 as compared with March 1, along with tremendous increases in the balance of trade in favor of the United States, there is a much more cheerful atmosphere prevalent here. It is felt that prosperity all over the land is near at hand; or, if not actual prosperity, greatly improved conditions will soon make their appearance. Opening of spring, low interest rates, the $375,000,000 emergency currency retired, save for $13,000,000 now outstanding, an apparently improved confidence among business interests that injurious legislation by congress is at an end, all are held to be favorable factors.

Moreover, there seems to be the belief among business men who come to Washington that the industrial improvement, brought about after some extremely trying and dangerous times, periods when the widespread depression promised to result in the worst panic in the history of the country, will be permanent if a policy of reasonable protection of American industries can be established.

Great details of balance of trade in our favor are being shown by reports issued by the department of commerce. The usual monthly statement of foreign trade for the month of February and the eight months ending with February was issued the latter part of last week and showed that for February the balance of trade in favor of the United States was $169,198,804, as compared with only $23,560,362 for February, 1914. The balance in favor of the United States for the eight months period ending with the February just passed was $545,667,878, as compared with $359,404,269 for the same period of the preceding year.

It is interesting in this connection to go back to show how the present situation contrasts with the demoralized condition that the country has been facing, caused, it seems evident, by political activities and legislation.

In November, 1912, the month of the last presidential election, the balance of trade was $162,000,000 in favor of this country. In November, 1913, it was only $97,357,000. In October, 1913, most of the provisions of the Underwood-Simmons tariff law became effective. In January, 1914, the balance of trade in our favor was reduced to $49,224,000. In February, 1914, it dropped to $25,876,000. In March that year it had fallen to $4,944,000, and in the April immediately following, it had entirely disappeared and it continued that way in varying amounts, until in July, 1914, when the balance of trade against the United States was $5,539,000. The European war broke out the first of August, and for that chaotic month, the balance against the United States was $19,000,000.

In September, the balance again turned in favor of this country, amounting to $16,000,000. In October, it was $56,000,000. In November, it was $79,000,000, and in December it was $131,863,077. The balance kept growing until it reached the one for February, $169,198,804.

Reports of the department of commerce show that for the first 10 months of 1914, after the new tariff law became effective, as compared with the first 10 months of 1913, the imports into this country had increased $88,000,000. During the same period, the exports from this country had decreased $342,000,000. By adding these two items together, it is shown that during the first 10 months of 1914, as compared with the first 10 months of 1913, the balance of trade had entirely shifted, until in that respect, this country was the loser to the amount of $430,000,000, and this in the face of the fact that three of the months during 1914, August, September and October, were included in the war period, when the net balance of trade in favor of this country was $53,000,000.

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Action has been started in the United States district court by James P. McGinan, to place the Harrow Spring Co., Kalamazoo, Mich., in the hands of a receiver. He alleges he is creditor in the sum of $67,300. The plant of the Harrow Spring Co. was built in 1900 and began operating in January, 1901. It has three reverberatory furnaces and two trains of rolls, one 9 and one 16-inch. It produced mild merchant steel bars and specialized on spring steel. A plant for the manufacture of springs for cars, etc., and another for the manufacture of harrow teeth, hay-rake teeth, etc., were operated in connection with the works.

## Receiver Asked

A receiver for the Eveland Engineering & Mfg. Co., Philadelphia, manufacturer of rivets, has been petitioned for in the United States court in that city, on the grounds that discrepancy between the condition of that company shown by a financial statement of January, 1914, and of the present time, is so large that an examination of its affairs is warranted. John Mustard has been appointed receiver of the company. Samuel L. Eveland, formerly president of the Standard Roller Bearing Co., now in the hands of receivers, is head of the Eveland company. According to the petition, the company's financial statement early in 1914 showed a surplus of $109,058. Recently, the sale of the property of the company under a distress for rent brought a small sum.

## Conforming to the Clayton Law

Western Electric Co., at its annual meeting, effected an important change in its board of directors. This change was designed to comply with the spirit of the Clayton law, which evidently aims to prevent a supply company, through interlocking directors, from exerting an improper influence upon the purchases of a public service corporation or public carrier. The Western Electric Co. is largely owned by the American Telephone & Telegraph Co. It is virtually the manufacturing and supply department of the Telephone company, and the Telephone company has been represented upon its board of directors, so that while the relation between the companies is the exact opposite of that at which the law was aimed, the companies technically come within the relation prohibited.

To comply with this law it becomes necessary to either adopt a method of

operations between the Western Electric Co. and the telephone companies which would add vastly to the expense, or to eliminate from the board of each company all representatives of the other. Although the law allows two years in which to make adjustments, it is the policy of the Bell system when a law is known and understood, to comply fully and at once. Therefore, Mr. Thayer retires as vice president and director of the American Telephone Co. and Mr. Vail and associates in the Telephone company retire from the Western Electric board, which has been reduced in number.

The new members of the board of the Western Electric Co. are men who have long been connected with the company. The board as now constituted consists of E. M. Barton, H. A. Halligan, W. H. Miner, A. L. Salt, W. P. Sidley, Gerard Swope, H. B. Thayer.

## Industrial Stocks

The general trend of the stock market last week continued upward and, as in the preceding week, Bethlehem Steel advanced rapidly, making a gain of 13⅛ points. In spite of the invasion of Servian territory by Bulgarian forces, peace talk continued strong throughout the week. This apparently was not based on any definite inside information, but was the result of reasoning that with war expenditures of $15,000,000 per day, the titanic struggle cannot be continued indefinitely. Changes in stocks closely identified with the iron and steel business were as follows:

| | |
|---|---|
| American Brake Shoe & Fdy. Co. | — 2¼ |
| American Brake Shoe & Fdy. Co., prfd. | .... |
| American Can | + 2¾ |
| American Can, prfd. | + 1½ |
| American Car & Foundry Co. | + 1⅝ |
| American Car & Fdy Co., prfd. | 0 |
| American Locomotive | + 4⅜ |
| American Steel Foundries | + 1½ |
| Baldwin Locomotive | + 2 |
| Baldwin Locomotive, prfd. | .... |
| Bethlehem Steel | +13⅛ |
| Bethlehem Steel, prfd. | — ½ |
| Colorado Fuel & Iron | 0 |
| Continental Can | +10⅝ |
| Continental Can prfd. | + 2½ |
| General Electric | + 3 |
| International Harvester of N. J. | + ¼ |
| Inter. Harv. Corp. | — 8 |
| Nat'l. Enameling & Stamping Co. | — ⅝ |
| Pressed Steel Car | + ⅜ |
| Pressed Steel Car, prfd. | + 1 |
| Pullman Palace Car | + 1¼ |
| Republic Iron & Steel Co. | + 1⅜ |
| Republic Iron & Steel Co., prfd. | + 1½ |
| U. S. Cast Iron Pipe & Fdy. | .... |
| U. S. Cast Iron Pipe & Fdy., prfd. | 0 |
| United States Steel | + ⅜ |
| United States Steel, prfd. | 0 |
| Westinghouse Mfg. | + 2⅜ |

L. J. Harvey, attorney, has been appointed receiver for the Pirkl Iron Foundry, Long Island City, N. Y., in a suit instituted by the First National Bank of Amityville. John Pirkl, 325 Highland boulevard, Brooklyn, is president of the concern. The company formerly did a considerable business in structural material.

# War Materials

**Figure Very Prominently in Exports for February**

New York, April 6.—Interesting light upon the character and extent of the export movement in iron and steel, non-ferrous metals and kindred lines at the present time is given in the statistics of the shipments of this kind from the port of New York during the month of February. Exports of all kinds from this port in February totaled in value $110,562,328 compared with $68,610,842 a year ago. Iron and steel products with the exception of steel bars and barbed wire fell away. A large part of the increase in these two lines may be attributed to war buying. The heavy gain in metal working machinery is impressive as well as that in automobiles, cartridges, fire arms, in zinc or spelter, etc.

A table of the exports by values during February compared with February a year ago is as follows:

| | Feb., 1915. | Feb., 1914. |
|---|---|---|
| Automobiles | $2,627,852 | $ 55,812 |
| Cartridges | 1,570,728 | 75,600 |
| Explosives | 714,463 | 167,879 |
| Firearms | 190,414 | 136,683 |
| Barbed wire | 264,737 | 245,514 |
| Copper | 5,578,366 | 8,286,693 |
| Zinc | 1,595,996 | 1,427 |
| Metal working machy. | 2,119,676 | 959,904 |
| Steel rails | 249,429 | 276,875 |
| Steel plates | 88,436 | 148,247 |
| Steel sheets | 114,768 | 204,364 |
| Steel bars | 250,844 | 133,089 |
| Structural iron | 296,196 | 443,828 |
| Mfct. of iron and steel | 445,554 | 517,286 |

## May Make Shells in West

Toronto, April 6.—The manufacture of shells for the British army is to be extended to the west. As a result of a conference between the official steel committee and representatives of various western cities, David Carnegie, ordnance expert, accompanied by experts from the department of mines and McGill University, has gone west. The party will visit a number of cities including Brandon, Regina, Moose Jaw, Portage la Prairie, Medicine Hat, Calgary, Edmonton, Vancouver and Victoria to ascertain to what extent factories and foundries in those places can be utilized for shell manufacture.

## Machinery Office Moved

The Chas. T. Topping Machinery Co., Pittsburgh, dealer in contractors', mine and quarry equipment, announces the removal of its offices to suite 928, Oliver building. The company will continue as direct representative in western Pennsylvania and northern West Virginia for Koehring concrete mixers; Clyde hoisting engines and derricks; Wylie concrete distributing systems; the cement-gun; McKiernan-Terry pile hammers and rock drills; Negley slack-cable excavators; Buchanan rock and ore crushers, crushing rolls and magnetic separators; Patten electric builders' hoists; Easton industrial cars and railway systems; Converse portable sand screens; Hotchkiss steel forms; and other well-known lines of machinery and equipment.

# Peace People

**Will Establish First American Plant at Dover, N. J.**

New York, April 6.—The International Peace Brotherhood which was organized at The Hague and which now is being incorporated under the laws of New Jersey, has decided to locate its first American plant in Dover, N. J. The Brotherhood has made arrangements whereby it acquires a site of nearly seven acres in Dover, N. J., and will commence work immediately upon several new buildings. According to the agreement, the new industry must give employment to not less than 200 people, 75 per cent of whom must be adult males, and must continue in operation for a period of 20 years. If, at the end of the first five years, the agreement has been carried out, the Brotherhood will get a clear title to the land and property. The products to be manufactured will include automobile and marine motors, aluminum castings and pressed and spun wares. The vice president of the Brotherhood, John C. Hoos, who now is at The Hague, will arrive in America shortly. Mr. Hoos also is treasurer of The Hague section of the League International de la Paix, of Berne, Switzerland, and an officer of the Geneva Peace Society. He also is a director of the International Magnesite Co. of Rotterdam.

## Courthouse Contracts

Cincinnati, April 5.—The mechanical equipment for the new $2,500,000 Hamilton county courthouse, has been awarded to the Standard Engineering Co., Washington, D. C., on its bid of $203,350. The contract for furnishing the elevators will be let to the Standard Plunger Elevator Co., on its bid of $103,855.

The contract for the construction of a steel and concrete bridge over the first crossing of the Nelson river on the Hudson Bay railway, which will be 500 feet long with a main span of 305 feet, has been awarded to the Canadian Bridge Co. The cost will be about $175,000.

# Business News of Nation's Capital

## Chamber of Commerce of United States Planning to Co-operate With Federal Trade Commission

Washington, April 6.—The lively interest taken by the chamber of commerce of the United States toward co-operating with the federal trade commission has been received here as a sign that the commission will be given every possible chance to make itself useful. The action of Henry A. Wheeler, Chicago, as chairman, in calling a meeting of the committee named by the national chamber to promote co-operation between business and the commission denotes that the national organization proposes to act vigorously and quickly as soon as the commission has perfected its organization.

The national chamber has denoted that it appreciates the magnitude of the task committed to the federal trade commission, the benefits that may result from hearty co-operation between the commission and the commercial interests of the country and the certain detriment sure to arise from an attitude of indifference or opposition. It therefore approved the suggestion of President J. H. Fahey to appoint the committee to carry this spirit of co-operation into effect, hoping that this voluntary committee representing the business interests of the country may come to occupy a relationship toward the commission not unlike that providing for the advisory council under the federal reserve act. Mr. Wheeler has denoted that the committee will, if possible, fulfill its mission along the lines laid down. The federal trade commission has also signified its intention to co-operate as fully as possible with the committee.

The committee consists of the following:

Henry A. Wheeler, Chicago, chairman, vice president of the Union Trust Co., Chicago, formerly president of the national chamber; Alfred B. Kock, Toledo, O., merchant and president of the National Dry Goods Association; Rush C. Butter, Chicago, lawyer, of the firm of Butter & Lynde; W. L. Saunders, New York, engineer and manufacturer, president of the Ingersoll-Rand Co.; Guy E. Tripp, chairman of the board of the Westinghouse Electric & Mfg. Co.; Henry R. Seager, New York, professor of political economy at Columbia University; Alex. W. Smith, Atlanta, Ga., lawyer, of the firm of Spooner & Cotton; Dr. I. C. White, Morgantown, W. Va., state geologist and expert in mining conservation.

It will be some time, however, according to all indications, before the committee can accomplish really concrete results. That seems apparent because the commission is still at work completing its internal organization. Preliminary preparations may consume a month or more, and it may be late in the summer or early in the fall before formal complaints are received, docketed, heard and decided as provided by the federal trade act. Between a dozen and a score of formal complaints against unfair methods of competition are said to have been filed with the commission, but the only action taken upon them as yet has been to acknowledge their receipt, and to notify those filing them that the commission will give the complaints consideration as early as possible. The commission will soon consider the rules of procedure it will adopt for its own convenience, and work out a plan to accord with the general terms prescribed in the act.

The commission is still greatly crowded for office space, although an added room was recently given to it by the department of commerce, in whose building the commission has quarters. Moreover, no arrangements have been made for a docket clerk to receive and docket complaints and decisions.

No formal application has been received by the commission for an investigation into the question of export combinations, although it has been taken up informally with the commission by the chamber of commerce of the United States. While some have maintained this denotes an indifference on the part of domestic manufacturers as to desire or right to organize foreign selling agencies, there has been expressed a general view that the business interests are leaving the matter solely in the hands of the national chamber.

## New Patent Law

Washington, April 6.—A law enacted in the closing hours of the last session of the sixty-third congress does away with the necessity of having the specifications, claims and drawings filed with the patent office by inventors and signed by the inventor attested by two witnesses. In the past, the signature of the inventor has been attested by two witnesses in every case before a patent was allowed by the patent office. It was explained at the patent office that there has never been a case where the signature of the inventor was questioned and that it had been deemed unnecessary to continue the practice of having the signatures of the witnesses attached to these papers.

## Expert Salesmanship Demanded

Washington, April 6.—"The greatest commercial necessity of the day in America is the need of expert salesmanship of American goods in foreign markets and to stimulate an awakening and to help to accomplish an education in this respect, should be and is the aim of our government in trying to help our exporters, through the corps of consuls and commercial attaches that it has all over the world," said Henry D. Baker, former United States consul at Bombay, and now commercial attache at Petrograd, in a recent address here. "I think that American methods of salesmanship, in America itself, are absolutely wonderful. If the same methods could be used in promoting our trade in foreign countries, the results would be wonderful.

"While in their domestic business American manufacturers show remarkable ability for distributing their products and for development of their markets, yet in foreign trade they show altogether too much disposition to flirt with their opportunities, instead of in an earnest, steadfast way seeking to win trade that may last forever, and whether times be for better or for worse."

Many communications from manufacturers have been received by Mr. Baker since his return from Petrograd relating to the present difficulty of arranging for payment for their goods in Russia and remittance of the proceeds of such sales. The department of commerce has given out a statement by Mr. Baker in which he says that apparently this difficulty furnishes a serious obstacle to American manufacturers taking full advantage of exceptional conditions which would seem to promise large gains to the American export trade to the Russian em-

# Business News of Nation's Capital

## Obstacles in Handling Russian Trade—Delay Award of Floating Crane—Seek Writ in Cash Register Case

pire. To avoid heavy loss by exchange in remitting money from Russia to the United States, Mr. Baker says, some American firms are pursuing the policy of keeping the proceeds of their sales on deposit with Russian banks.

Russia's recent action in abolishing the conventional tariff agreement between herself and Germany and Austria-Hungary and increasing tariff duties 10 per cent was received here with considerable interest and details are being anxiously awaited. In their absence, it is only problematical what it may do by way of aiding or injuring the United States. Views vary widely. Some maintain that, if this country will negotiate a trade treaty with Russia, as the latter nation desires, the prospects of greatly increased trade opportunities will be bright for the United States. On the other hand, an official in one of the government departments, while not pretending to be familiar with details of the new tariff rates, pointed out that the 10 per cent increase represents the amount of the recent depreciation in the value of the ruble. The increased rates would, therefore, overcome the reduced exchange value.

Just at present Russia is importing virtually nothing aside from war materials, but is expected to be a heavy importer of iron and steel and other articles from this country after the war is ended. Should this country be able to obtain favorable terms in a tariff treaty, it is maintained, a big business could be built up for American makers. Russia had indicated plainly, however, that if she negotiates another commercial treaty with this country, she must have the entire say as to the Jewish passport question. However, since then she has intimated that this issue might be settled in another manner, and the treaty be effected in the meantime. This matter has been one obstacle in the way of acting upon invitations of Russia statesmanship for the United States to take the trade that Germany and Austria formerly had.

### To Make Aeroplanes

Washington, April 6.—Plans have been prepared by the navy department for the establishment of government aeroplane manufacturing plants at Philadelphia and New York, each plant capable of turning out two or three machines a month at a cost of about $6,000 each. The plants would cost approximately $30,000 each. It is, of course, necessary to obtain approval from congress before these plans can materialize.

### Award Delayed

Washington, April 6.—The navy department expects to make its award in a few days for the 150-ton floating crane for the Norfolk, Va., navy yard. Bids for this crane were opened on Saturday, Feb. 27, but despite the time that has elapsed since then, it is asserted there is nothing unusual in the situation. The statement was made that all such awards are delayed until careful study can be given to the specifications accompanying the bids.

It will be remembered that the Wellman-Seaver-Morgan Co., Cleveland, was the lowest bidder, submitting a figure of $323,750 as the net price delivered at Norfolk in accordance with the navy department's design. Much interest has been manifested in the pending contract, because there were three foreign makers who made tenders, all of them higher than those of the four American bidders, when the tariff duty is taken into calculation. Interest was also heightened in view of the contracts given a German concern for the two gigantic cranes for the Panama canal, one of which broke down under test, and the other of which has not been given a trial. When it was learned that the American bidders for the Norfolk crane were lower than those of foreign makers, it was assumed the contract would go to the lowest American bidder, and that belief still prevails.

### Cash Register Case

Washington, April 6.—Although it is well known that the Supreme Court seldom grants a writ of certiorari in criminal cases, it is the hope of officials of the department of justice that it will adopt a different course with regard to the suit against the National Cash Register Co. Officials have announced their readiness to take the case to the Supreme Court on such a writ in an effort to obtain a review of the decision by the federal circuit court of Ohio, reversing conviction of the defendants and ordering a new trial. The appeal will be taken as soon as the writ and the government's brief can be prepared. The Supreme Court, should the writ be granted, might either affirm the decision of the circuit court, affirm it in part and order a retrial, or reverse its decision and reaffirm the findings of the lower court, which convicted the cast register officials.

Progress of this case has been watched with great interest by officials of the department of justice. Former Attorney General Wickersham, who began it, regarded the action as one of the most important ever brought under the criminal section of the Sherman law. He expected it to prove a large determining factor in arriving at the value of that statute for criminal prosecutions.

### They Are Coming

Washington, April 6.—Formal acceptance has been received by delegates from various countries who are to participate in the Latin-American conference of ministers of finance and bankers with Secretary of the Treasury McAdoo and bankers of the United States in this city on May 24. The former date of May 10 was changed owing to the illness of Mr. McAdoo.

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### Progress of Fertilizer Plant

The Tennessee Coal, Iron & Railroad Co. is making rapid progress on the construction of its plant for the recovery of phosphate fertilizer from open hearth slag. As mentioned in *The Iron Trade Review*, Nov.. 19, 1914, this plant is being erected at the Ensley works. The buildings are now being completed and the storage tanks are 60 per cent finished. Nearly all of the machinery, it is said, will be on the ground by April 10, and it is hoped to have the plant ready for operation by May 15.

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The Jos. L. Skeldon Engineering Co., Toledo, is installing a complete steam and electric plant for the Toledo-Ford Co., at Findlay, O., two new plants for the Ohio Central Railroad Co., and an ice plant for the Overland Ice Co., at Overland, O. This concern reports many small jobs in addition to the larger ones and states that inquiries are numerous.

# Big War Orders Are Being Held Up

## New York Air Brake and the Westinghouse Air Brake Contracts for War Materials May Be Cancelled—Inquiries for Export Demand Sweep Westward

THE machinery market in the east continues to be featured by an active war demand. There was a lull in the export demand last week, but this end of the market again is active and large orders are being entered for Russia, England and France. A great many war material contracts, including some new ones, are pending and it is likely that large deals will continue to be closed in the near future. The Crucible Steel Co. of America, which last week was reported to be figuring on an armament contract of huge proportions, has made no further headway in this matter. In some quarters, it now is believed the Crucible company will not book this contract and that, in fact, this particular business will not be placed in this country. Among new companies inquiring on shrapnel contracts, are the General Railway Signal Co., Rochester, N. Y., and the Howard Iron Works, Buffalo. It is believed likely the former company, at least, shortly will book a contract on which it is figuring. The A. P. Smith Mfg. Co., East Orange, N. J., is reported to have closed the shrapnel contract on which it was figuring; at least it has bought a considerable quantity of equipment for shrapnel-making. An event of significance to the machine tool trade is the incorporation in Bridgeport, Conn., a few days ago, of the Bridgeport Projectile Co., with a capitalization of $2,000,000. This company has purchased a site and is rushing plans for new buildings in which projectiles will be manufactured; it is figuring on a list of machinery involving an outlay of several hundred thousand dollars. The Curtis Mfg. Co., St. Louis, is inquiring for shrapnel forgings. G. M. Haardt, of Paris, who last week was reported as having come to this country for the purpose of purchasing shrapnel-making equipment, has closed some large requirements and is expected to continue as an important factor in the market. Mr. Haardt is director-general of the Mors Automobile Co., Paris, which is to be provided with equipment for making large quantities of shrapnel. The E. W. Bliss Co., Brooklyn, bought considerable further equipment last week. The General Electric Co. recently booked a large shrapnel contract on which it is working its Lynn, Mass., plant night and day; no especially large purchases of machinery by this company, however, are reported.

It is understood the hitch in the contracts for war materials recently booked by the New York Air Brake Co. and the Westinghouse Air Brake Co. is becoming more serious and in some quarters it is intimated these contracts may be canceled. Such a development would be of great interest to the machinery trade since both companies recently bought outright large quantities of machinery for making shrapnel. The Worcester Pressed Steel Co., Worcester, Mass., has booked a shell contract.

Purely domestic requirements continue to improve slightly, but most of the business of this character placed involves lots of only one or two tools. The Standard Oil Co. has put out a list of eight tools for a new machine shop at Canton, Md. The crane market is rather quiet. The M. W. Kellogg Co. has bought a 15-ton Maris crane for installation at the Winchester Repeating Arms Co. L. F. Shoemaker & Co., Pottstown, Pa., have purchased three 25-ton Morgan cranes. No new railroad inquiries of importance have come out in the east.

### *April Will Be Busy*

INQUIRIES for nearly all lines of machine tools are coming out in good volume in the Pittsburgh district and indications are that April will prove one of the best months experienced in several years. Concerns taking orders for war material are buying special equipment, and the demand from the regular line trade is gradually improving. The Westinghouse interests are placing orders for special automatic lathes for a war order. The Carnegie Steel Co. soon will ask estimates on a half dozen electric cranes for a new steel tie finishing plant to be built at Munhall and bids are being asked on one large and one small crane for the Homestead Steel Works and the Schoen Steel Wheel Works, of the Carnegie company. The Crucible Steel Co. of America has denied its inquiry on 16 electric cranes for its plant at Syracuse, N. Y. Builders of heavy rolling mill equipment are receiving numerous inquiries and a number of attractive undertakings are being considered. The McKeesport Tin Plate Co., which will double its capacity, soon will ask preliminary estimates on new equipment.

### *Cincinnati Considers Credits*

IN Cincinnati, one large maker of machine tools has just closed an order for the shipment of 140 engine lathes to Petrograd, via Copenhagen or Bergen. The amount to be paid by the purchaser is $58,000. Deliveries are to begin the second week in June, and are to be continued at the rate of approximately 20 machines weekly. Payments are to be made upon presentation of invoices and railroad shipping documents, and credit expires Aug. 30. Makers of machine tools are now giving much attention to credits, and are demanding in most cases a confirmed credit in New York before shipments will be made. For all payments made within 30 days, a discount of 2 per cent is usually allowed, and the penalty for failure to deliver within specified limits is usually 0.5 per cent of the entire order for each week of delay. Buyers are reserving the right, also, to cancel all orders that have been delayed. Demand is still largest for lathes, and is coming almost wholly from Europe. Many inquiries are being offered local lathe manufacturers, but they cannot be accepted, as the shops cannot take on additional business. It is estimated that fully $7,000,000 worth of machinery has been contracted for in Cincinnati alone since the outbreak of the European war.

### *Chicago Gets More Business*

SELLERS of machine tools in Chicago now find themselves immersed in the wave of buying which has been rolling westward since Europe began to buy its machine shop equipment and considerable quantities of projectiles in this country. As the capacity of eastern concerns to furnish machines and projectiles has been exhausted buyers have come further afield and at present there is much activity

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Upper Right Installation—The National Transit Co., Oil City, Pa.
Lower Left Installation—Youngstown Sheet & Tube Co., No. 2 Mill, Youngstown, Ohio.
Lower Right Installation—The Parish-Bingham Co., Cleveland, Ohio.

## Ayer & Lord Tie Company

**General Office, Railway Exchange, Chicago**

CLEVELAND, OHIO—926 Illuminating Bldg.
KANSAS CITY, MO.—1117 Rialto Bldg.
MEMPHIS, TENN.—1402 Exchange Bldg.
PHILADELPHIA, PA.—319 Perry Bldg.

in the west. A Chicago manufacturer has taken a contract for a large quantity of ammunition and is inquiring for about 50 engine lathes, turret lathes and other machines. A manufacturer in Iowa is figuring on a similar contract, which if closed will require a considerable quantity of new equipment. Machine tool sellers point with pride to the appearance of many red tags on machines in their stores indicating they are sold. The volume of business being handled at present is said to be greater than has been experienced during the past two years. The fact that Europe has need of projectiles in greater volume than could be produced at home and that the supply of turning machines could not be obtained sufficiently rapidly has driven them to contract with firms in this territory and this has created a domestic demand for these machines which is absorbing both new and second-hand lathes of every description. One dealer here has been buying every lathe he could get hold of and has operated as far west as Denver in his endeavors to obtain machines. The increased prices on new goods is reflected on second-hand machines, but prices seem to be a minor consideration with those seeking additional equipment.

## EASTERN STATES

AYER, MASS.—Chandler machine shop on Faulkner street was burned with about $1,500 loss.

BOSTON.—Lighthouse inspector, 19 Congress street, will receive bids until 2 p. m., April 16 for an oil engine and air compressor.

WORCESTER, MASS.—Worcester Pressed Steel Co. has booked an order for 200,000 shells for 5.5-inch guns. These will be turned out at the rate of 2,000 a day. This is the second contract for war materials the company has booked. The first was for 350,000 scabbards, which are being shipped daily.

BRANFORD, CONN.—Malleable Iron Fittings Co. is building a foundry addition, 81 x 210 feet.

BRIDGEPORT, CONN.—Bridgeport Hardware Co., is building a 2-story factory, 40 x 135 feet, on Iranistan avenue.

BRIDGEPORT, CONN. — Lake Torpedo Boat Co. has plans for a 1-story addition, 50 x 80 feet.

BRIDGEPORT, CONN. — Locomobile Co. of America, has plans for erecting a 4-story manufacturing addition on its Seaside park property.

BRIDGEPORT, CONN. — Max Ams Co., manufacturer of can machinery, which recently located a plant here, has added a 20-ton crane and made plans for a large addition.

BRIDGEPORT, CONN. — Jas. Stewart & Co., 30 Church street, New York, have the general contract for erecting three more 5-story additions for the Union Metallic Cartridge Co.

BRIDGEPORT, CONN. — The Bridgeport Projectile Co., which was incorporated a few days ago, has purchased a site and will begin immediately the erection of a large plant. The company is capitalized at $2,000,000. It has inquiries out on a large list of tools.

MERIDEN, CONN.—Standard Oil Co., it is said, has purchased land from John L. Billard for the erection of a plant to manufacture manganese steel. Company also is known as the Pan-American Reduction Co., 140 Broadway, New York City, incorporated with a capital of $6,000,000.

WATERBURY, CONN.—The Benedict & Burnham branch of the American Brass Co. has begun demolishing several of its older buildings and will replace them with modern structures, for which the plans now are being drawn.

WATERBURY, CONN.—John Sachsenhauser, 29 Pearl street, is preparing plans for a 3-story, 25 x 67-foot factory building.

BATAVIA, N. Y.—Elba Food Products Co., near here, has let contract for a 112 x 260-foot machine building, and for a 53 x 77-foot machine shop.

BROOKLYN.—Iron Clad Mfg. Co., 929 Flushing avenue, has let the contract for additions to its plant.

BROOKLYN. — Generator Valve Co., 294 Taaffe place, is ready for bids on a 1-story, 39 x 59-foot building, to be erected at Dinsmore place near Logan street. Architects are Holler & Volckening, 82 Wall street, New York.

BUFFALO.—Besou Electrical Co., contracting, electrical works, has been incorporated; $25,000 capital stock; by F. M. Smith, B. H. Fisher, J. T. Arundell.

BUFFALO.—Howard Iron Works is figuring on a shrapnel contract.

BUFFALO.—John W. Cooper Co., engineering construction, contracting, managerial, has been incorporated; $100,000 capital stock; by J. W. Van Allen, F. Dan Huntington, J. W. Cooper.

ILION, N. Y.—Jas. Stewart & Co., 30 Church street, New York, have the general contract for four 4-story additions to be built here, for the Remington Arms Co.

JAMESTOWN, N. Y.—Anchor Furniture Co. is planning to erect a 4-story, 40 x 60-foot addition to its plant on Holmes street; plans are being prepared by Mason & McNeil.

NEW YORK.—Epstein & Rosenberg, lawyers, 19 Cedar street, are endeavoring to sublet portions of a French shrapnel contract.

NEW YORK.—The 4-story plant of the McDougall & Cotter Iron Works, 606-610 West Fifty-fifth street, was damaged by fire.

NEW YORK.—Gottschalk Automatic Brick Oven Co., ovens, machinery, tools, has been incorporated; $50,000 capital stock; by J. Tannenbaum, H. Gottschalk, G. B. Lester, 699 Washington street.

OAKFIELD, N. Y.—Citizens voted recently to issue $35,000 bonds for the construction of a waterworks.

ROCHESTER, N. Y.—General Railway Signal Co. is figuring on a shrapnel contract, and the appearances are that this contract will be booked shortly.

SCHENECTADY, N. Y.—Architect C. G. Van Rensselaer, 437 State street, is taking bids on four 1 and 2-story factory buildings, 64 x 90, 14 x 80, 56 x 155 and 65 x 90 feet, respectively. The owner's name is withheld.

SYRACUSE, N. Y.—Phoenix foundry of the Smith & Gaffery Co. was slightly damaged by fire.

SYRACUSE, N. Y.—W. H. Locke, 110 West Kennedy street, has begun excavating for a 1-story, 55 x 80-foot machine shop at Pearl and Hickory streets.

UTICA, N. Y.—Savage Arms Co. has let contract for a 3-story, 54 x 400-foot addition.

BEECH CREEK, PA.—Beech Creek Auto Co., Dr. George H. Tibbons, secretary, contemplates erection of 2-story building to manufacture auto trucks.

CHESTER, PA.—A. T. Green, has let contract for a 1-story, 60 x 140-foot factory building.

DUQUESNE, PA. — Economy Valve Mfg. Co. has been incorporated with a capital of $5,000 by William E. Essop, William K. Kroger, Duquesne, Frank J. Hamrock, John W. Smart, Homestead, Pa., and Curtis R. Rinaman, Pittsburgh; new plant contemplated.

EASTON, PA.—Treadwell Engineering Co. is in the market for one 10-ton and one 15-ton crane.

FARRELL, PA.—Knox Pressed & Welded Steel Co. is still in the market for several machine tools.

IRWIN, PA.—Board of education, North Huntington township, has engaged W. G. Eckles, architect, New Castle, Pa., to prepare plans for a 2-story brick and concrete fireproof high school building, to cost $75,000; the building will contain a modern manual training department, fully equipped, but details are not yet available.

McKEESPORT, PA.—Bids will be received until April 22 by W. T. Norton, secretary of the board, for the construction of the proposed technical high school; Vrydaugh & Wolfe, architects; while no announcement has been made, it is probable considerable equipment will be purchased for shops.

MERCER, PA.—Reznor Mfg. Co. is ready to take bids on a 4-story, 60 x 250-foot building, to cost about $200,000. H. Edsil Barr, Erie, is the architect.

NEWCASTLE, PA. — The Pittsburgh & Lake Erie railroad, which has purchased the Atlantic mill site of the Republic Iron & Steel Co., Youngstown, at this center, may erect a round house and repair shops.

OIL CITY, PA.—John L. Shaffer, chairman, county commissioners, will receive bids until April 13 for a creosoted block floor and plank sidewalk for the French creek bridge, Utica; for the removal of the Shippen bridge from over Sugar creek and erecting a 102-foot span, pony warren truss steel bridge with a 16-foot roadway, steel stringers and creosoted block floor; also a creosoted block floor for the White bridge in Oil City; separate bids for each job; and certified check for $500 required.

PHILADELPHIA.—The Pennsylvania railroad is taking bids for a blacksmith shop addition to its meadow shops at Newark, N. J.

PHILADELPHIA.—Barrett Mfg. Co. has received a permit to erect a 20 x 35-foot boiler house addition.

PHILADELPHIA.—Thos. C. Trafford has plans posted for a 1-story factory, 62 x 132 feet, to be erected at Wheatsheaf lane and Edgemont street, for the Independent Mfg. Co.

PHILADELPHIA. — Belmont Iron Works has been granted a building permit for a 1-story, 60 x 100-foot iron foundry, to be erected on Westmoreland street, east of Richmond street, for the General Smelting Co.

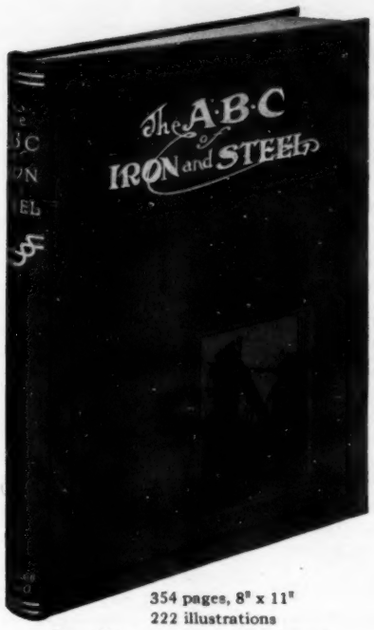
PHILADELPHIA. — Architect Robert W. Pollock, 1802 Chestnut street, is ready for bids on a 2-story, 60 x 128-foot building, to be erected at Columbia avenue and Hancock street, for the West Electric Hair Curler Co., now located at 45 South Front street.

PITTSBURGH.—Pittsburgh Gage & Supply Co. is in the market for several tools.

PITTSBURGH.—Annealing Box Co., capital $5,000, has been incorporated by James P. Over, S. K. Hunter, and J. Lee McKnight.

PITTSBURGH.—Bids will be asked shortly for a 5-story reinforced concrete and brick building for the School of Industry, Carnegie Institute of Technology.

PITTSBURGH.—Carnegie Steel Co. plans to buy a large crane for its works at Munhall, and a small crane will be purchased for

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Statistics of Production of all kinds of Iron and Steel Products in United States and Canada.
Annual shipments from each mine on the Lake Superior ranges.

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the Schoen Steel Wheel Works; in the neighborhood of six cranes will be obtained for the proposed steel tie finishing building.

## CENTRAL STATES

AKRON, O. — Commissioners will appropriate $8,000 for a bridge over the canal at Youngs hotel, $8,000 for another bridge over the canal at Peninsula, and will arrange for the construction of a bridge on West Talmatge avenue some time during the summer.

CINCINNATI. — Bids will be received in about two weeks for the erection of the new Woman's building at the University of Cincinnati. Plans are being prepared by A. Lincoln Fechheimer, architect, Cincinnati.

CINCINNATI. — R. K. LeBlond Machine Tool Co. will post plans shortly for its proposed power building, 80 by 100 feet, of steel, brick and concrete construction. The company will be in the market for boiler and engine equipment.

CINCINNATI.—Power plant equipment and light garage machinery will be needed by the Doepke Co., which is building a garage and power building for a series of large flat buildings. S. S. & G. H. Godley, architects, are in charge of construction.

CINCINNATI.—Plans for the construction of the proposed $400,000 Y. M. C. A. building will not be put upon the boards for bids until next fall. The height of the building has not been determined, but it will require several thousand tons of steel. Elzner & Anderson, architects, are at work on the preliminary sketches.

CLEVELAND.—Hendrickson Machine Co. has increased its capital stock from $12,000 to $40,000.

CLEVELAND.—Wm. J. Walker Steel Co. has been incorporated; $20,000 capital stock; by S. R. Spitz, Fred E. Wirtschafter, Fanny B. Walker, H. T. Bradley.

CLEVELAND.—Wils-App Tool Co. has been incorporated; $10,000 capital stock; by C. W. Sapp, E. H. Preble, R. B. Abbott, E. E. Wilson, L. D. Hertzig.

CLEVELAND.—Commissioner of purchases and supplies will receive bids until noon, April 15 for water tube boilers for the division of water.

COLUMBUS, O.—Modern Tool, Die & Machine Co. has been incorporated; $25,000 capital stock; by C. A. and Joseph Deibel, John F. Cahill, Richard M. Baer, Frank R. Schwartz.

DAYTON, O.—Barney & Smith Car Co. is inquiring for shrapnel forgings.

ELYRIA, O.—Plans are being prepared and bids will be asked shortly for an addition to the plant of the Western Automatic Machine Screw Co.; completion is planned by summer.

ELYRIA, O.—Elyria Enameled Products Co. has been incorporated; $150,000 capital stock; by Charles E. Wilson, John Murbach, C. E. Blanchard, C. M. Braman and Theodore Robinson.

MIDDLETOWN, O.—Paul A. Sorg Paper Co. has increased its capital stock from $500,000 to $1,000,000.

SHELBY, O.—Shelby Wire Co. has been incorporated; $35,000 capital stock; by S. I., A. F., U. J., M. C., and J. E. Armbruster.

STEUBENVILLE, O. — La Belle Iron Works will have sketches prepared at an early date for its proposed by-product coke plant.

TIFFIN, O.—County commissioners will advertise for bids shortly for the construction of a bridge over Silver creek in Bloom township.

TOLEDO, O.—Great Lake Slag Co. has been incorporated; $60,000 capital stock; by George A. and N. R. France, L. H. Hamblitz, H. E. Bair, L. E. Coliver.

TOLEDO, O.—Lighting and heating plants at Wauseon, Bryan, Napoleon, Delta and Montpelier, O., are to be improved. The Ohio Gas Light & Coke Co., with offices in Toledo, has applied for authority to issue $17,000 in new stock and $30,000 in bonds to make the improvements.

WEST JEFFERSON, O.—West Jefferson Home Telephone Co. has been incorporated; $10,000 capital stock; by J. C. Hamilton, Calvin Liggett, Frank Biggert, Thomas C. Gregg, R. W. Boyd.

YOUNGSTOWN, O.—Ohio State Telephone Co. plans the erection of a $600,000 fireproof telephone exchange. C. F. Owsley, architect, is preparing plans.

YOUNGSTOWN, O. — Republic Iron & Steel Co. will install new equipment in the boiler plant of its Brown-Bonnell works; modern automatic stokers and coal handling equipment will be purchased; estimated cost, $300,000.

ASHLAND, KY.—Norton Iron Works has awarded a contract for the erection of its 5-story, steel addition to the Mt. Vernon Bridge Co., Mt. Vernon, O.

BEDFORD, KY. — Thurman Jenkins has purchased a building formerly used as a creamery and will install ice-making machinery.

CADIZ, KY.—A street lighting system is to be installed by A. P. White, who recently built a power plant in connection with his flour mill.

DANVILLE, KY.—Clerk of the council has information regarding local interests which plan to establish a street railway.

IRVINE, KY.—A site for the plant of the Irvine Light & Ice Co., which was recently organized, has been secured and equipment will be bought at once.

KNOXVILLE, KY.—East Tennessee Marble Co. will equip a marble quarry at Neubert, Tenn., and also will establish a stone-cutting plant in connection with it. H. H. Thrasher is president.

LEXINGTON, KY. — American Metallic Packing Co. is in the market for a second-hand Sargent air rock-drill and a double-drum hoisting engine, with boiler.

LOUISVILLE, KY. — Robinson Mfg. Co. has been incorporated to manufacture automobile accessories; $10,000 capital stock; by John C. Robinson and others.

LOUISVILLE, KY.—Eureka Sales Co. is developing a patented harrow, and will have it made by contract for the present, after which a factory may be established; E. W. Pratt Jr. is in charge.

LOUISVILLE, KY.—Kentucky Wagon Mfg. Co. will manufacture automobiles in addition to farm wagons and other lines. Not much additional machinery will be needed, but a good sized quantity of new material will be purchased. R. V. Board is president.

MARION, KY.—West Kentucky Ore Co. has purchased fluorspar lands and will install equipment at once; prices on machinery and supplies are invited.

MORRISTOWN, KY.—The mayor has information regarding the equipment to be purchased for a proposed filter plant for which $2,500 is available.

PINEVILLE, KY—The fiscal court will purchase a traction steam shovel; address Judge Asher.

SEBREE, KY.—Sebree Mining Co. will install an additional boiler; Percy B. Smith is in charge.

SEVREE, KY.—O. H. Parker and T. A. Semple are purchasing machinery for the equipment of a clay-working plant.

SOMERSET, KY.—Power and special machinery for a laundry and dry cleaning plant are being purchased now by Beecher Smith.

WHITESBURG, KY.—Fred Starkey, Somerset, Ky., and N. Starkey, Pikesville, Ky., have asked for a franchise for the establishment of an electric light plant.

FT. WAYNE, IND.—Modern Way Furnace Co. has increased its capital stock from $3,000 to $10,000.

FRANKLIN, IND.—Empire Machine Wks., badly damaged by fire Feb. 12, will be rebuilt by O. B. Smith and leased by John and Earl Lapp.

GARY, IND.—Local capital is interested in a proposition of erecting a plant in Gary for the manufacture of a steel and reinforced concrete railroad tie and automatic lock, invented by Charles G. Vanderwater, Akron, O.

GARY, IND.—New York Central Railway has bought a large tract between Gary and Millers for a freight clearing yard with a capacity for 35,000 cars and engineers of the road announce work will be started this summer.

HAMMOND, IND.—Edward Simon, auditor of Lake county commissioners, Crown Point, is having plans prepared for a $90,000 steel and concrete bascule bridge at Calumet avenue. The Sherzer Rolling Lift Bridge Co., Monadnock building, Chicago, is engineer.

INDIANAPOLIS. — Weil Boiler Co. has been incorporated to manufacture and sell sheet iron and steel products; $50,000 capital stock; by Isadore Weil, E. J. Kelley and C. T. Kingston.

CHICAGO.—Chicago & Northwestern railroad is in the market for a wheel press.

CHICAGO.—General Wire Tie Co. has been incorporated to manufacture wire ties and other devices; $25,000 capital stock; E. Isaacson, E. E. Segersten and A. Franck Philipson, 914 Winona avenue.

CHICAGO.—Atlas Brass Mfg. Co. has been incorporated to operate a brass foundry; $10,000 capital stock; by F. P. Roy, A. M. Roy and B. J. Braheney, 4011 West Van Buren street.

CHICAGO.—Chicago Aluminotype Co. has been incorporated to manufacture printing, embossing and stamping plates; $15,000 capital stock; by F. T. Milchrist, D. S. Wentworth and H. H. Lieneman, 4570 Hazel avenue.

CHICAGO.—Fiedler Process Veneering Co. has been incorporated to manufacture iron, steel, copper and other metals; $2,500 capital stock; by Clarence M. Beard, David Jotzinger and Ralph F. Stern, 155 North Clark street.

JOLIET, ILL.—Joliet Forge Co. has been incorporated to manufacture articles of iron and steel; $50,000, capital stock; John J. Sharpe, Wm. Sharpe and Edward F. Sharpe.

WAUKEGAN, ILL.—Northern Brass Mfg. Co. has increased its capital stock from $25,000 to $75,000.

WAUKEGAN, ILL.—Carter Long Magneto Co. has been incorporated to manufacture generators for intermittent electric current; $500,000 capital stock; by Benjamin Parmalee, Jonas Carter and August Long.

BAY CITY, MICH.—Chamber of commerce has secured subscriptions and donations to the amount of $18,990 or half of the amount required to bring to Bay City an Indiana manufacturing plant making a light plant appliance.

BAY CITY, MICH. — Bigelow-Cooper Co. has been incorporated at $150,000 and will erect a planing mill and hardwood flooring plant on the river front, between Thirteenth and Seventeenth streets. Charles A. Bigelow will be president.

DETROIT.—Kelsey Wheel Co. has plans prepared for a 1-story, steel press building, 80 x 250 feet.

DETROIT.—A $100,000 addition to the plant of the Remington Arms Co., Windsor, Ont., is being planned.

DETROIT.—Timken-Detroit Axle Co. has announced the purchase of the plant, buildings and machinery of the Metal Products Co., in which will be manufactured small sized automobile axles.

DOWAGIAC, MICH. — Rudy Furnace Co. has been formed in Dowagiac and has been

offered a 5-acre site for a $50,000 plant at Penton Harbor, Mich.

LANSING, MICH. — Fire in the office building of the Seager Engine Co. did about $4,000 damage.

MUSKEGON, MICH. — Plye Pattern Co. will erect a 2-story, 50 x 100-foot plant this summer. Campbell, Wynant & Cannon, foundry workers, have purchased the Muskegon Height plant of the Plye company.

NILES, MICH.—Michigan Wire Goods Co. has increased its capital stock from $20,000 to $30,000.

SAGINAW, MICH.—Henry Ford, Detroit, has purchased 80 acres on South Michigan avenue on which will be erected a factory to be known as the Ford-Edison plant.

DEERFIELD, WIS.—Provision in the way of acreage is being made by the Nelson Mfg. Co., tank heaters and farm equipment so that the works may be considerably extended and enlarged during the year. A new storage warehouse, 50 x 200 feet, part of which will be devoted to manufacturing, will be erected at once. N. M. Nelson is president.

MILWAUKEE.—Modern Stamp & Stencil Co. has been incorporated with $4,800 capital stock by Minna Bundy, Forest L. Adams and Joseph B. Doe, attorney.

De PERE, WIS.—Henry Alberts, city engineer, and Frank Schuering, county engineer, have completed plans for the reconstruction of Main avenue bridge over Fox river.

DE PERE, WIS.—A special election will be held April 6 on the question of issuing $15,000 bonds, the proceeds to be added to a fund of $9,000 already available for the reconstruction of the drawbridge over Fox river connecting Main avenue and George street.

LAKE GENEVA, WIS.—Lone & Crodan have broken ground for a garage and machine shop, 50 x 100 feet, to be equipped for commercial machine work.

MANITOWOC, WIS. — American Seating Co. is contemplating the erection of additions providing an aggregate of 15,000 square feet.

MANITOWOC, WIS.—Oslo Power & Light Co., Oslo, Manitowoc county, has increased its capital stock from $5,000 to $30,000 to rebuild the hydro-electric plant at Oslo falls, badly damaged by high water last fall. O. A. Anderson, Manitowoc, is president and general manager.

MANITOWOC, WIS.—The removal of the plant of the Atlas Engineering Co., Milwaukee, power concrete mixers, to Manitowoc, Wis., has been deferred until fall because of the delay in the completion of the factory building being erected by the Manitowoc Citizens' Association.

MARKESAN, WIS. — Grand River Telephone Co. has been organized here with $10,000 capital by M. H. Croswell, H. A. Price and C. F. Schrader to construct and operate a local and rural telephone system.

MENOMONEE FALLS, WIS. — On April 6 a special election will be held on the proposition of bonding the village for $20,000 for the extension of water mains and the erection of a reservoir. J. W. Cannon is village clerk.

MILWAUKEE.—Federal Pressed Steel Co. will erect a $10,000 addition to its plant.

JOPLIN, MO.—F. M. Wentzel Sheet Metal Co. has been incorporated; $4,000 capital stock; by L. H. Forn. F. M. Wentzel and W. C. Troutman Jr.

KANSAS CITY, MO.—J. P. Langan, purchasing agent, will receive bids until May 5 for a 20,000,000-gallon, steam turbine gear centrifugal pump.

MORNING SUN, IA.—W. B. Garvin, town clerk, will receive bids until April 15 for the erection of a $25,000 water works.

MUSCATINE.—Barry Co., recently incorporated, will build a plant equipped to manufacture transmission machinery, pressed steel pulleys and shafting.

## SOUTHERN STATES

ALEXANDRIA, VA.—Milton Draft Register Corporation has received its charter to manufacture a patented draft regulator for locomotives; $1,000 to $200,000 capital stock; E. B. Andrews, president; Edward C. Scharf, secretary, both of Washington, D. C.

ABINGDON, TENN.—Abingdon Ice & Cold storage Co. will purchase ice-making refrigerating equipment.

McCLOUD, TENN.—Holston Tile Co. now is equipping its plant, erecting kilns, drying-sheds, etc., and is in the market for power and special machinery.

McEWEN, TENN.—Henry J. Tidwell and others have purchased timber lands and will equip a saw mill; the boiler will be 60 horsepower.

MEMPHIS, TENN.—Thomas, Harmon & Hickey Construction Co. will begin the manufacture of a patented automatic boiler gauge.


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*So—*
*Mr. Salesmanager,*
*Look these over*
*and*
*BE HAPPY.*

*Bridgeport Projectile Co., Bridgeport, Conn., recently incorporated at $2,000,000, will begin immediately the erection of a large plant. It has inquiries out for a large list of machine tools.*

*Carnegie Steel Co. soon will ask for estimates on a half dozen electric cranes for its proposed steel tie finishing plant at Munhall and bids are being asked for one large and one small crane for the Homestead Steel Works and the Schoen Steel Wheel Works of the Carnegie Co.*

*Minneapolis Steel & Machinery Co., Minneapolis, is in the market for two cranes.*

*Chicago & North-Western railroad is in the market for a wheel press.*

*Pittsburgh Gage & Supply Co., Pittsburgh, is in the market for several tools.*

*Standard Oil Co. is in the market for eight machine tools for a machine shop it is erecting in Canton, Maryland.*

*Warren Foundry & Machine Co., Phillipsburg, N. J., is taking bids on 12 or 14 cranes, which it proposes to install in a plant it will erect.*

*Treadwell Engineering Co., Easton, Pa., is in the market for one 10-ton and one 15-ton crane.*

*Republic Iron & Steel Co., Youngstown, O., will install new equipment at the boiler plant of its Brown-Bonnell works, at an estimated cost of $300,000. Modern automatic stokers and coal handling equipment will be purchased.*

*Jas. Stewart & Co., 30 Church street, New York City, have the general contract for erecting three more 5-story additions to the plant of the Union Metallic Cartridge Co., Bridgeport, Conn., also the general contract for four 4-story additions to be erected in Ilion, N. Y., for the Remington Arms Co.*


## WESTERN STATES

WALLACE, IDA.—John H. Wourms and associates are asking for a franchise for a gas plant.

CASTLE ROCK, WASH.—It is reported A. L. King, owner of the Huntington coal mine, contemplates the construction of a briquetting plant.

CATHLAMET, WASH. — C. H. Reeves, merchant of Jefferson, Ore., will ask the council for a franchise for an electric light system.

PORT TOWNSEND, WASH.—It is reported the Chicago, Milwaukee & St. Paul Railway Co. has made arrangements for a right-of-way on the last section of the Peninsula line.

SEATTLE.—Port of Seattle, 843 Central building, will receive bids until 1.30 p. m., April 14 for equipment for shipping conveyors.

SEATTLE.—Board of public works has approved the use of $10,000 by the engineering department in preparing plans for bridges across Washington canal.

SPOKANE, WASH.—A. W. Robinson and P. H. Wall will install a 40,000-foot capacity sawmill, which will be electrically driven.

SPOKANE, WASH.—R. T. Lawrence has been awarded the contract for the erection of a round-house, power house, machine shop, blacksmith shop, etc., for the Oregon-Washington Railroad & Navigation Co., at an estimated cost of $100,000.

TOPPENISH, WASH.—It is reported the Northern Pacific railway will construct a short extension to the new town of Saluskin.

TOPPENISH, WASH.—City clerk will receive bids until April 19 for about 2,900 feet of 4-inch cast iron water main with hydrants, valves, etc.

GRANTS PASS, ORE.—W. A. Burr will prepare plans for a 150-ton cyaniding plant for the Hammond Mining Co. in the Mount Baker district and for a 600-ton plant in connection with the bi-metallic work in Phillipsburg district in Western Montana.

PORTLAND, ORE.—City contemplates the erection of a $550,000 auditorium; J. H. Freelander, New York, probably will prepare plans.

PORTLAND, ORE. — Oregon-Washington Railroad & Navigation Co. plans the expenditure of $310,000 for improvements in Washington and Oregon; of this amount $60,000 will be spent for the construction of round-house at Walla Walla, Wash.

LOS ANGELES.—Western Metals Co. has been incorporated; $100,000 capital stock; by R. J. Simpson, J. L. Armer, R. Langworthy, M. E. Smith, E. F. Nordgren.

LOS ANGELES.—Pacific Peerless Weighing Machine Corporation has received its charter; $150,000 capital stock; George W. Pierson, James Shalda, F. C. Fairbanks, Beatrice E. Neal, J. C. McFarland, incorporators.

SACRAMENTO, CAL. — M. J. Desmond, city clerk, will receive bids until April 20 for riveted steel and cast iron pipe, valves, hydrants and other appurtenances.

STOCKTON, CAL.—Engineering & Foundry Co. has been incorporated; $100,000 capital stock; by L. F. Grimsley, S. C. Mix, M. Davidson, L. L. Miller, J. W. Hannah.

# IRON AND STEEL PRICES

**Corrected up to Tuesday noon**

## PIG IRON

(Delivery to July 1.)

| | |
|---|---|
| Bessemer, valley | $13.60 |
| Bessemer, Pittsburgh | 14.55 |
| Basic, Pittsburgh | 13.45 |
| Basic, eastern Pa. | 14.00 |
| Malleable, Pittsburgh | 13.70 to 13.95 |
| Malleable foundry, Chicago | 13.00 |
| Malleable foundry, Philadelphia | 15.00 to 15.25 |
| Malleable foundry, Buffalo | 12.50 to 13.00 |
| No. 1X foundry, Philadelphia | 14.54 to 14.79 |
| No. 2 foundry, Pittsburgh | 13.45 to 13.95 |
| No. 2 foundry, valley | 12.50 to 13.00 |
| No. 2 foundry, Cleveland | 13.25 |
| No. 2 foundry, Ironton | 12.75 to 13.00 |
| No. 2 foundry, Chicago | 13.00 |
| No. 2X foundry, Philadelphia | 14.29 to 14.54 |
| No. 2X fdy., N. J. tidewater | 14.25 to 14.50 |
| No. 2X foundry, Buffalo | 12.50 to 13.00 |
| No. 2 plain, Philadelphia | 14.00 to 14.25 |
| No. 2 plain, N. J. tidewater | 14.00 to 14.25 |
| No. 2 plain, Buffalo | 12.25 to 12.50 |
| No. 2 southern, Birmingham | 9.25 to 9.75 |
| No. 2 southern, Cincinnati | 12.15 to 12.65 |
| No. 2 southern, Chicago | 13.50 to 14.00 |
| No. 2 southern, Phila. delivery | 13.75 to 14.00 |
| No. 2 southern, Cleveland | 13.25 to 13.75 |
| No. 2 south'n, New York docks | 13.50 to 13.75 |
| No. 2 southern Boston, docks | 13.50 to 13.75 |
| No. 2 south. interior, New Eng. | 14.25 to 15.25 |
| No. 2 southern, St. Louis | 12.90 to 13.40 |
| Virginia No. 2X furnace | 12.50 |
| Virginia 2X, Philadelphia | 15.25 |
| Virginia 2X, Jersey City | 15.50 |
| Virginia 2X, Boston points | 15.75 |
| Gray forge, eastern Pa. | 13.25 to 13.50 |
| Gray forge, Pittsburgh | 13.45 |
| Gray forge, Birmingham | 8.75 to 9.00 |
| Silveries, 8 per cent, Jackson, O. | 14.75 to 15.25 |
| Silveries, 5 per cent Birmingham | 12.50 |
| Silveries, 5 per cent, Chicago | 16.35 |
| Standard low phos., Phil. | 19.00 to 20.00 |
| Lebanon low phos., furnace | 16.00 to 16.50 |
| Low phos., Pittsburgh | 20.95 to 21.20 |
| Charcoal, Lake Superior, Chgo., Nos. 1 to 4 | 15.75 to 16.50 |
| Charcoal, Buffalo | 15.75 to 17.00 |
| Charcoal, Birmingham | 25.00 |

## IRON ORE

(Lower lake ports.)

| | |
|---|---|
| Old range Bessemer, 55 per cent | $3.75 |
| Mesabi Bessemer, 55 per cent | 3.50 |
| Old range, non-Bess., 51½ per cent | 3.00 |
| Mesabi non-Bessemer, 51½ per cent | 2.85 |

(Per unit Philadelphia.)

(Prices nominal.)

| | |
|---|---|
| Foreign Bess., 50 to 65 per cent. | 7½c to 8½c |
| For'n non-Bes., 50 to 65 per cent | 7½c to 8½c |

## COKE

(At the ovens)

| | |
|---|---|
| Connellsville furnace | $1.50 to 1.65 |
| Connellsville fur. contr. | 1.65 to 1.75 |
| Connellsville foundry | 2.00 to 2.40 |
| Connellsville fdy. contr. | 2.25 to 2.50 |
| Wise county furnace | 1.75 to 2.00 |
| Wise county foundry | 2.10 to 2.40 |
| Pocahontas furnace | 1.75 to 2.00 |
| Pocahontas foundry | 2.00 to 2.25 |
| New River, foundry | 2.50 to 3.00 |
| New River, furnace | 2.00 to 2.25 |

## FERRO-ALLOYS

| | |
|---|---|
| Ferro-mang., Balti. (prompt) | $90.00 to 100 |
| Ferro-mang. (future), Balti. | 78.00 |
| Ferro-silicon, 50 per cent, Pbgh. | 71.00 to 73.00 |
| Ferro-silicon, 50 per cent, Phila. | 71.00 to 73.00 |
| Ferro-sil., 12 to 13 per cent | 20.00 |
| Ferro-sil., 11 to 12 per cent | 19.00 |
| Ferro-sil., 10 to 11 per cent | 18.00 |
| Ferro-sil., 9 to 10 per cent | 17.00 |
| (Ferro-silicon quoted at furnace Ashland, Jackson and New Straitsville) | |
| Ferro-carbon titanium, carloads, per lb. | 8c to 12½c |

## SEMI-FINISHED STEEL

| | |
|---|---|
| Open hearth billets, Phila. | $21.56 to 22.56 |
| Forging billets, Phila. | 24.56 to 25.56 |
| Forging billets, Pbgh. | 24.00 to 24.50 |

## Freight Rates via Panama Canal

Rates on finished materials, including plates, shapes, bars, wire, nails, etc., to Pacific coast points via Panama canal, per 100 lbs., in carload lots, exclusive of insurance and dockage.

| | |
|---|---|
| From New York | $0.45 |
| From Pittsburgh | .619 |
| From Youngstown | .639 |
| From Niles | .619 |
| From Wheeling | .619 |
| From Steubenville | .619 |
| From Johnstown | .604 |
| From Coatesville | .545 |
| From Steelton | .555 |
| From Bethlehem | .529 |
| From Cleveland | .65 |
| From Chicago | .765 |

Rates on sheet mill products $2 per ton higher.

| | |
|---|---|
| Wire rods, Pittsburgh | $25.00 to 26.00 |
| Billets, Pittsburgh | 19.50 to 20.50 |
| Billets, Youngstown | 18.50 to 19.50 |
| Sheet bars, Pittsburgh | 19.00 to 20.00 |
| Sheet bars, Youngstown | 19.00 to 20.50 |

## RAILS AND TRACK MATERIAL

| | |
|---|---|
| Stand. Bess., rails, Pbgh. | 1.25c |
| Stand. open-hearth rails, Pbgh. | 1.34c |
| Lgt. rails, 8-lbs., Pbgh. & Chgo. | 1.22c |
| Lgt. rails, 12 lbs., Pbg. & Chgo. | 1.17c |
| Lgt. rails, 16 to 20 lbs., Pgh. & Chgo. | 1.12c |
| Lgt. rails, 25 to 45 lbs., Pbgh. and Chgo. | 1.07c |
| Relaying rails, standard, Pbgh. & Chgo. | $23.00 to 24.00 |
| Relaying rails, light, Chicago | 21.50 to 22.50 |
| Angle bars, st. sect. Pbgh. base. | 1.50c |
| Angle bars, st. sections, Chicago | 1.50c |
| Spikes, railroad, Pbgh. | 1.35c to 1.40c |
| Spikes, railroad, Chgo. | 1.50c |
| Track bolts, Pbgh. | 1.85c |
| Track bolts, Chgo. | 2.00c |

## Freight Rates, Pig Iron

| | |
|---|---|
| Mahoning and Shenango valleys to:— | |
| Cleveland | $0.95 |
| Newark, N. J. | 3.00 |
| New England | 3.00 |
| Philadelphia | 2.79 |
| Pittsburgh | .95 |
| St. Louis | 3.18 |
| Buffalo to:— | |
| Albany, N. Y. | $1.26 |
| New England (all rail) | 2.58 |
| New York and Brooklyn (all rail) | 2.58 |
| New York and Brooklyn (by canal) | 1.00 to 1.50 |
| Virginia furnaces to:— | |
| Boston docks (r. and w.) | $3.05 |
| New England (all rail) | 3.25 |
| New York dock (r. and w.) | 2.88 |
| Birmingham, Ala., to:— | |
| Cincinnati | $2.90 |
| Chicago | 4.00 |
| Cleveland | 4.00 |
| Louisville, Ky. | 2.65 |
| New York (all rail) | 6.15 |
| New York (rail and water) | 4.25 |
| Philadelphia (all rail) | 5.20 |
| Philadelphia (rail and water) | 4.00 |
| Pittsburgh | 4.90 |
| Savannah, Ga. | 2.75 |
| Chicago, to:— | |
| Des Moines | $2.80 |
| Milwaukee | .50 |
| Moline, Ill. | 1.47 |
| Omaha | 3.58 |
| St. Louis | 1.58 |
| Ironton and Jackson, O., to:— | |
| Chicago | $2.54 |
| Cincinnati | 1.26 |
| Cleveland | 1.62 |
| Detroit | 1.81 |
| Indianapolis | 1.58 |

## SHAPES, PLATES AND BARS

| | |
|---|---|
| Structural shapes, Pittsburgh | 1.10c to 1.20c |
| Structural shapes, Chicago | 1.39c |
| Structural shapes, Philadelphia | 1.259c to 1.359c |
| Structural shapes, New York | 1.269c to 1.369c |
| Struc. shapes, San Francisco | 2.00c to 2.05c |
| Tank plates, Chicago | 1.29c to 1.39c |
| Tank plates, Pittsburgh | 1.10c to 1.20c |
| Tank plates, Philadelphia | 1.309c to 1.359c |
| Tank plates, New York | 1.319c to 1.369c |
| Bars, soft steel, Pittsburgh | 1.20c |
| Bars, soft steel, Chicago | 1.39c |
| Bars, soft steel, Philadelphia | 1.309c to 1.359c |
| Bars, soft steel, New York | 1.319c to 1.369c |
| Hoops, carloads, Pittsburgh | 1.25c to 1.30c |
| Bands, Pittsburgh | 1.15c |
| Shafting, Pbgh., carloads, disc. 69 to 70 per cent | |
| Bar iron, Chicago | 1.15c |
| Bar iron, Philadelphia | 1.125c to 1.175c |
| Bar iron, New York | 1.125c |
| Bar iron, Cleveland | 1.25c |
| Bar iron, Pittsburgh | 1.20c to 1.25c |
| Hard steel bars, Chicago | 1.20c to 1.25c |
| Smooth finish, mchy. steel, Chi. | 1.68c |

## SHEETS AND TIN PLATE

| | |
|---|---|
| No. 28, black, Pittsburgh | 1.80c to 1.90c |
| No. 28, black, Chicago | 1.94c to 1.99c |
| No. 28, tin mill, black, Pbgh. | 1.85c to 1.90c |
| No. 28, galvanized, Pbgh. | 3.30c to 3.40c |
| No. 28, galvanized, Chgo. | 3.59c |
| No. 10, blue, annealed, Pbgh. | 1.30c to 1.35c |
| No. 10, blue, annealed, Phila. | 1.459c to 1.509c |
| Tin plate, 100 lb., coke base | 3.20c to 3.35c |

## EXTRAS FOR SHEET OR TIN MILL SPECIFICATIONS

(Per hundred pounds.)

| | |
|---|---|
| Single pickled, cold roll. and re-anl. | 30 cents |
| Hot roll'd pickl'd and anl., tin mill | 25 cents |
| Full pickl'd, cold rolled and re-anl. | 50 cents |
| Auto sheets | 75 cents |
| Blued stove pipe stock | 10 cents |
| Range steel | 30 cents |
| Re-squaring | 10 cents |
| Roller leveling | 10 cents |
| Patent leveling and re-squaring | 35 cents |
| Oiling sheets | 10 cents |
| Deoxidizing | 10 cents |
| Lime finish | 10 cents |
| Open-hearth stamping steel, free from mill scale | 55 cents |
| Special open hearth deep stpg. steel free from mill scale | 80 cents |
| Extra deep special auto body stock | $1.25 |
| Ext. for 28 gage ov. 32 to 36-in. wide | 10 cents |
| No reduction for sheets not annealed. | |

The above extras apply on both sheet and tin mill specifications, at the same rate.

## IRON AND STEEL PIPE

(Pittsburgh.)

| | Black. Butt-weld. | Galv. Butt-weld. |
|---|---|---|
| Steel, ¾ to 3 inches | 80 | 69½ |
| Iron, ¾ to 2½ inches | 70 | 59 |
| | Lap-weld. | |
| Steel, 2½ to 6 inches | 79 | 68½ |

## BOILER TUBES

| | |
|---|---|
| Steel, 3½ to 4½ inches l. c. l. | 75 |
| Iron, 3½ to 4½ inches c. l. | 60 |

## WIRE PRODUCTS

(Retailers' price 5 cents above jobbers' quotation.)

| | |
|---|---|
| Wire nails, jobbers, Pittsburgh | $1.60 |
| Plain wire, jobbers, Pittsburgh | 1.40 |
| Galvanized wire, jobbers, Pbgh. | 1.90 |
| Polished staples, Pbgh. | 1.60 |
| Galvanized staples, Pbgh. | 2.10 |
| Barb wire, painted, jobbers, Pbgh. | 1.60 |
| Barb wire, galv., jobbers, Pbgh. | 2.10 |

# IRON AND STEEL PRICES

**Corrected up to Tuesday noon**

## BOLTS AND NUTS

(Delivered within 20-cent freight radius.)

Carriage bolts, ⅜ x 6 inches, smaller or shorter, rolled threads, 80 and 10; cut threads 80 and 15; larger or longer, 75 and 17½.

Machine bolts with hot pressed nuts ⅜ x 4 inches, smaller or shorter, rolled 80 and 20; cut, 80 and 15; larger or longer, 80.

Gimlet and cone point lag or coach screws, 85 and 2½.

Hot pressed square, blank or tapped nuts. $6.40 off list; hot pressed hexagon blank or tapped, $7.30 off.

Cold pressed, square, blank or tapped, $6.10 off; hexagon, blank or tapped, ⅜ inch and larger, $7.50; ⅞-inch and smaller, $8.00.

## RIVETS

| | |
|---|---|
| Structural rivets, Pbgh | 1.45c to 1.50c |
| Structural rivets, Chgo | 1.68c |
| Boiler rivets, Pbgh | 1.55c to 1.60c |
| Boiler rivets, Chgo | 1.78c |

## STEEL SHEET PILING

(Pittsburgh.)

| | |
|---|---|
| Base sizes | 1.55c to 1.60c |

## COLD ROLLED STRIP STEEL

(Subject to regular extras.)

| 0.10 to 0.19 Carbon. | Base price Cut to length | |
|---|---|---|
| | Hard. | Soft. |
| 1½ inch and wider | 2.85 | 3.10 |
| 0.100 and thicker | 2.95 | 3.20 |
| 0.050 to 0.099 inc. | 3.10 | 3.35 |
| 0.035 to 0.049 inc. | 3.35 | 3.75 |
| 0.031 to 0.034 inc. | 3.60 | 4.00 |
| 0.025 to 0.030 inc. | 3.80 | 4.20 |
| 0.020 to 0.024 inc. | 4.70 | 5.20 |
| 0.017 to 0.019 inc. | 5.10 | 5.60 |
| 0.015 and 0.016 | 5.95 | 6.45 |
| 0.013 and 0.014 | 6.55 | 7.05 |
| 0.012 | 6.90 | 7.40 |
| 0.011 | 7.25 | 7.75 |
| 0.010 | Coils. | |
| 0.100 and thicker | 2.75 | 3.00 |
| 0.050 to 0.099 inc. | 2.80 | 3.05 |
| 0.035 to 0.049 inc. | 2.95 | 3.20 |
| 0.031 to 0.034 inc. | 3.10 | 3.50 |
| 0.025 to 0.030 inc. | 3.20 | 3.60 |
| 0.020 to 0.024 inc. | 3.30 | 3.70 |
| 0.017 to 0.019 inc. | 3.60 | 4.10 |
| 0.015 and 0.016 | 4.00 | 4.50 |
| 0.013 and 0.014 | 4.70 | 5.20 |
| 0.012 | 5.05 | 5.55 |
| 0.011 | 5.40 | 5.90 |
| 0.010 | 5.75 | 6.25 |

## CAST IRON WATER PIPE

| | |
|---|---|
| Six to 48-in., Cleveland | 23.75 |
| Four-inch, Chicago | 26.00 |
| Six to 12 inches, Chicago | 24.00 |
| Large sizes, Chgo | 23.00 |
| Six-inch, New York | 20.50 to 21.50 |
| Four-inch, New York | 21.50 to 22.50 |
| Four-inch, Birmingham | 19.50 |
| Six-inch and larger, Birmingham | 19.50 |

Gas pipe, $1 per ton higher than water.

## WAREHOUSE PRICES

| | |
|---|---|
| Steel bars, Chicago | 1.65c |
| Steel bars, Cleveland | 1.80c |
| Steel bars, Cincinnati | 1.75c to 1.80c |
| Steel bars, Philadelphia | 1.65c to 1.70c |
| Steel bars, New York | 1.80c |
| Steel bars, St. Louis | 1.70c |
| Iron bars, Chicago | 1.65c |
| Iron bars, Cleveland | 1.75c |
| Iron bars, St. Louis | 1.65c |
| Iron bars, Cincinnati | 1.70c to 1.80c |
| Iron bars, Philadelphia | 1.60c to 1.65c |
| Iron bars, New York | 1.65c to 1.70c |
| Hoops, Chicago | 2.15c |
| Shapes and plates, Chicago | 1.75c |
| Shapes and plates, Cleveland | 1.90c |
| Shapes and plates, Cincinnati | 1.85c to 1.90c |
| Shapes and plates, St. Louis | 1.80c |
| Shapes and plates, Philadelphia | 1.65c to 1.70c |
| Shapes and plates, New York | 1.85c |
| No. 10 blue anl. sheets, Chgo | 1.95c |
| No. 10 blue anl. sheets, Cleve | 2.05c |
| No. 10 blue anl. sh. St. Louis | 2.00c |
| No. 10 blue anl. sheets, Cinci | 2.00c |
| No. 28 black sheets, Chgo | 2.55c |
| No. 28 black sheets, Cleveland | 2.45c |
| No. 28 black sheets, Cincinnati | 2.45c to 2.55c |
| No. 28 black sheets, St. Louis | 2.55c |
| No. 28 galv. sheets, Chgo | 3.75c |
| No. 28 galv. sheets, Cleveland | 3.50c |
| No. 28 galv. sheets, Cincinnati | 3.40c to 3.55c |
| No. 28 galv. sheets, St. Louis | 3.75c |

## Freight Rates, Coke

| Connellsville regions, per 2,000 lbs., to:— | |
|---|---|
| Baltimore | $1.80 |
| Buffalo | 1.85 |
| Chicago | 2.50 |
| Cleveland | 1.60 |
| Detroit | 2.10 |
| East St. Louis | 2.80 |
| Joliet | 2.50 |
| Louisville | 2.50 |
| Milwaukee | 2.70 |
| New York | 2.85 |
| Philadelphia | 2.05 |
| Pittsburgh | .75 |
| Richmond, Va. | 2.94 |
| Toledo | 1.85 |
| Valley Furnaces | 1.20 |
| Cincinnati | 2.00 |

## IRON AND STEEL SCRAP

(Net Tons.)

| | |
|---|---|
| No. 1 railroad wrought, Chgo | $ 8.50 to 9.00 |
| No. 1 railroad wrought, Cleve | 9.75 to 10.00 |
| No. 1 railroad wrought, St. L | 8.00 to 8.50 |
| No. 1 railroad wrought, Cincin | 8.00 to 8.50 |
| No. 2 railroad wrought, Chgo | 8.25 to 8.50 |
| No. 2 railroad wrought, St. L | 7.50 to 7.75 |
| Arch bars and transoms, Chgo | 11.50 to 12.00 |
| Arch bars and transoms, St. L | 11.00 to 11.50 |
| Knuckles, coup. & spr'gs, Chgo | 8.75 to 9.00 |
| Knuckles, coup. & spr'gs, St. L | 8.25 to 8.50 |
| Shafting, Chicago | 11.25 to 11.75 |
| Shafting, St. Louis | 11.00 to 11.50 |
| Steel car axles, Chicago | 10.50 to 11.00 |
| Steel car axles, St. Louis | 10.00 to 10.50 |
| Locomotive tires, Chicago | 8.50 to 9.00 |
| Locomotive tires, St. Louis | 9.00 to 9.25 |
| Cut forge, Chicago | 8.25 to 8.75 |
| Pipes and flues, Chicago | 6.50 to 6.75 |
| Pipes and flues, Cleveland | 7.25 to 7.50 |

## Freight Rates, Finished Material

| From Pittsburgh, carloads, per 100 lbs. to:— | |
|---|---|
| New York | 16.9 cents |
| Philadelphia | 15.9 cents |
| Boston | 18.9 cents |
| Buffalo | 11.6 cents |
| Baltimore | 15.4 cents |
| Cleveland | 10.5 cents |
| Cincinnati | 15.8 cents |
| Chicago | 18.9 cents |
| Minneapolis and St. Paul | 32.9 cents |
| Denver | 68.6 cents |
| St. Louis | 23.6 cents |
| New Orleans | 30 cents |
| Birmingham | 45 cents |
| Pacific coast, (all rail) | 80 cents |
| Pacific coast, via Panama canal | 61.9 cents |

| | |
|---|---|
| Pipes and flues, St. Louis | 6.00 to 6.50 |
| No. 1 cast, Chicago | 9.00 to 9.25 |
| No. 1 cast, Cleveland | 10.00 to 10.50 |
| No. 1 cast, Cincinnati | 8.50 to 9.00 |
| No. 1 cast, St. Louis | 9.00 to 9.25 |
| No. 1 busheling, Chicago | 7.25 to 7.75 |
| No. 1 busheling, Cleveland | 8.25 to 8.50 |
| No. 1 busheling, Cincinnati | 6.00 to 6.50 |
| No. 1 busheling, St. Louis | 7.00 to 7.25 |
| No. 2 busheling, Chicago | 6.25 to 6.75 |
| No. 1 boiler plate, cut, Chgo | 5.50 to 5.75 |
| No. 1 boiler plate, cut, St. L | 5.50 to 5.75 |
| Boiler punchings, Chicago | 8.25 to 8.75 |
| Cast borings, Chicago | 5.00 to 5.25 |
| Cast borings, Cleveland | 6.00 to 6.25 |
| Cast borings, Cincinnati | 4.75 to 5.25 |
| Cast borings, St. Louis | 4.75 to 5.25 |
| Machine shop turnings, Chicago | 5.00 to 5.50 |
| Machine shop turnings, Cleve | 5.75 to 6.00 |
| Machine shop turnings, Cinci | $ 4.75 to 5.25 |
| Machine shop turnings, St. L | 5.25 to 5.75 |
| Malleable agl., Chicago | 7.50 to 7.75 |
| Malleable agricultural, St. Louis | 6.00 to 6.50 |
| Malleable, railroad, Chicago | 7.75 to 8.25 |
| Malleable, railroad, Cincinnati | 7.00 |
| Malleable, railroad, St. Louis | 6.50 to 7.00 |
| Angle bars, iron, Chicago | 11.25 to 11.75 |
| Angle bars, iron, St. Louis | 9.50 to 10.00 |
| Angle bars, steel, Chicago | 8.25 to 8.50 |
| Angle bars, steel, St. Louis | 8.00 to 8.25 |
| Stove plate, Chicago | 7.75 to 8.00 |
| Stove plate, Cleveland | 8.00 to 8.50 |
| Stove plate, Buffalo | 8.25 to 8.75 |
| Stove plate, Cincinnati | 6.50 to 7.00 |
| Stove plate, St. Louis | 6.50 to 6.75 |
| Bundled sheet, Cincinnati | 4.75 to 5.25 |

(Gross tons.)

| | |
|---|---|
| Heavy melting steel, Pbgh | $12.00 to 12.25 |
| Heavy melting steel, Buffalo | 10.25 to 10.75 |
| Heavy melting steel, Chgo | 9.25 to 9.50 |
| Heavy melting steel, Cleveland | 10.25 to 10.50 |
| Heavy melting steel, Cincinnati | 9.00 to 9.50 |
| Heavy melting steel, eastern Pa | 11.00 |
| Heavy melting steel, New York | 8.75 to 9.00 |
| Heavy melting steel, St. Louis | 9.50 to 10.00 |
| Bundled sheet, Buffalo | 7.00 to 7.50 |
| Grate bars, Buffalo | 9.00 to 9.50 |
| Grate bars, New York | 6.50 to 7.00 |
| No. 1 railroad wrought, east. Pa. | 12.50 to 13.00 |
| No. 1 railroad wrought, Pbgh | 10.25 to 10.75 |
| No. 1 R. R. wght., New York | 10.50 to 11.00 |
| No. 1 R. R. wrought, Buffalo | 10.00 to 10.50 |
| Shafting, New York | 12.50 to 13.00 |
| Shafting, eastern Pa | 15.00 to 15.50 |
| Wrought pipe, New York | 8.00 to 8.25 |
| Wrought pipe, eastern Pa | 10.25 to 10.50 |
| Mch. shop turnings, New York | 6.25 to 6.50 |
| Machine shop turnings, Buffalo | 5.50 to 6.00 |
| Mch. shop turnings, Pbgh | 7.75 to 8.00 |
| Mch. shop turnings, eastern Pa | 8.25 to 8.75 |
| Cast borings, New York | 5.75 to 6.25 |
| Cast borings, eastern Pa | 8.00 to 8.50 |
| Cast borings, Buffalo | 6.00 to 6.50 |
| Cast borings, Pittsburgh | 8.25 to 8.50 |
| Stove plate, N. J. points | 8.00 to 8.25 |
| Stove plate, Pittsburgh | 8.25 to 8.75 |
| Stove plate, eastern Pa | 9.00 to 9.50 |
| Shoveling steel, Chicago | 8.75 to 9.50 |
| Shoveling steel, St. Louis | 8.00 to 8.50 |
| Reroll'g rails, 5 ft. & ov., Pbgh | 12.00 to 12.50 |
| Reroll. rails, 5 ft. & ov., Chgo | 10.00 to 10.50 |
| Reroll. rails, 5 ft. & ov., Cleve | 11.00 to 11.50 |
| Reroll. rails, 5 ft. & ov., E. Pa | 11.50 to 12.00 |
| Reroll, rails, 5 ft. & ov., St. L. | 9.25 to 9.75 |
| Steel rails, short, St. Louis | 9.50 to 9.75 |
| Steel rails, short, Chicago | 10.00 to 10.50 |
| Steel rails, short, Cleveland | 11.00 to 11.50 |
| Steel rails, short, St. Louis | 9.25 to 9.50 |
| Iron rails, Cleveland nom | 11.75 to 12.00 |
| Iron rails, Chgo | 11.50 to 12.00 |
| Iron rails, Cincinnati | 10.25 to 10.75 |
| Iron rails, eastern Pa | 13.50 to 14.00 |
| Iron rails, St. Louis | 10.00 to 10.50 |
| Iron rails, Pittsburgh | 12.50 to 13.00 |
| Frogs, switches, guards, Chgo | 9.25 to 9.50 |
| Frogs, switches & g'rds, St. L. | 9.25 to 9.50 |
| Car wheels, (iron), Pittsburgh | 11.00 to 11.50 |
| Car wheels, (stee!), Pittsburgh | 12.00 |
| Car wheels, Chicago | 9.75 to 10.00 |
| Car wheels, eastern Pa | 10.75 to 11.25 |
| Car wheels, Buffalo | 10.00 to 10.50 |
| Car wheels, N. J. points | 9.25 to 9.50 |
| Car wheels, St. Louis | 10.00 to 10.25 |
| Iron axles, Pittsburgh | 17.50 to 18.00 |
| Iron axles, Cincinnati | 19.00 to 20.00 |
| Iron axles, eastern Pa | 18.50 to 19.00 |
| Iron axles, Buffalo | 16.00 to 16.50 |
| Iron axles, Chicago | 15.50 to 15.75 |
| Steel car axles, New York | 11.50 to 12.00 |
| Steel car axles, Buffalo | 12.00 to 12.50 |
| Steel car axles, Cleveland | 12.00 to 12.50 |
| Steel car axles, eastern Pa | 14.00 to 14.50 |
| No. 1 busheling, Buffalo | 7.50 to 8.00 |
| No. 1 busheling, Pittsburgh | 9.75 to 10.00 |
| No. 2 busheling, Buffalo | 5.25 to 5.75 |
| Low phosphorus steel, Buffalo | 12.50 to 13.00 |
| Low phosphorus steel, Pbgh | 13.75 to 14.00 |
| Low phos. steel, eastern Pa | 14.00 to 14.50 |
| No. 1 forge, eastern Pa | 8.50 to 9.00 |
| No. 1 cast, eastern Pa | 12.00 to 12.50 |
| No. 1 cast, Pittsburgh | 12.00 to 12.25 |
| No. 1 heavy cast N. J. points | 11.00 to 11.50 |
| Mall. iron, R. R., Cleveland | 10.25 to 10.50 |
| Malleable railroad, Pittsburgh | 10.00 to 10.25 |
| Malleable R. R., Buffalo | 9.50 to 10.00 |
| Malleable, R. R., east Pa | 8.50 to 9.00 |
| Bundled sheet, Pittsburgh | 9.25 to 9.50 |
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## Electric Smelting of Ferro-Alloys

*(Continued from page 722)*

is estimated at 15,000 to 20,000 tons; ferro-silicon, 30 to 90 per cent silicon, 6,000 tons; ferro-chrome, 5,000 tons; ferro-tungsten, 1,000 tons; silico-manganese, 2,000 tons; other alloys, 1,000 tons. The detail of manufacture of these alloys is about as is later described in general under each ferro-alloy.

*Meraker Electric Smelting Co.*

The works of the Meraker Electric Smelting Co. are at Kopperaaen, Norway, 55 miles east of Trondjhem on the main line of the railroad to Stockholm. The company operates an electric-furnace plant for the manufacture of calcium carbide and ferro-alloys at Kopperaaen, and a pulp-grinding plant about three miles west, at Meraker. The concern has been manufacturing since 1905, and, in spite of several fires that almost destroyed the plant, has been very successful. In the summer of 1912, ferro-chrome was the only alloy manufactured, but it was the intention of the company to begin the production of other ferro-alloys, especially ferro-titanium, during the next year.

The company owns its own power plants. At Kopperaaen there is a fall of 250 feet in the Kopperaaen river. The river is fed by two lakes regulated so as to give a minimum flow of 160 cubic feet per second and a maximum flow of 210 cubic feet per second. At present about 2,250 kilowatts is developed at the foot of this fall at Kopperaaen, and 750 kilowatts more is received from the power plant at the pulp mill in Meraker. The total power used in the electric furnace plant is about 3,000 kilowatts. At Kopperaaen there are two 1,125-kilowatt direct-current generators delivering current at the furnaces at 65 volts and about 14,250 amperes. There are also several small units for power and lighting purposes.

Of the 3,000 kilowatts now being used half is for ferro-chrome manufacture and the rest for calcium carbide manufacture. The cost of power is stated to be $8.30 per kilowatt-year, or 0.095 cent per kilowatt-hour. At a point farther up the river 3,000 kilowatts more is to be developed this year, making a total of 6,000 kilowatts used in the electric furnaces. When desired it is possible to develop 4,000 kilowatts more at this point.

Raw materials are unloaded into bins near the Kopperaaen railroad station, about one-half mile from and 300 feet above the plant. There are bins for coal, limestone and chromite. Besides the bins there is a shipping house where boxes for ferro-chrome and iron drums for calcium carbide are made. An aerial tramway runs from the bins and shipping house to the main storage bins about 200 feet from the furnace house but at an elevation 200 feet higher. Here the raw materials are dumped from the tram buckets and boxes and drums of product are loaded into the buckets after having been hauled up the hill from the furnace house by cable steps. At the level there is a kiln for calcination of the limestone. From the bins 200 feet above the furnace house the ores, coal and lime are lowered to the furnaces by an incline skip discharging into bins above and outside the furnace house.

From these bins the materials are drawn into cars running around a floor in the furnace room about 15 feet above the main working floor, and are dumped into small chutes at each furnace. The chutes, two to each furnace, are about 4 feet deep and 1½ feet by 1 foot in cross section. From these chutes the ore, coal and lime are drawn into small cars and dumped into the furnaces about 15 feet away.

The furnace house is about 110 feet long, 75 feet wide and 22 feet high, and is built of structural steel with brick-and-stone walls. An open ventilator in the roof runs the length of the building. The gases from all the furnaces except one

that is covered and connected with a stack escape into the furnace room and pass out through the roof.

The main floor of the furnace house is cement, with tracks inlaid for the hauling of small ladle trucks. There is an open space at one end for the dumping of hot carbide and ferro-chrome. Around each furnace at the level of the furnace top there is a steel floor, supported by iron pillars. The furnaces are charged from these floors, which are about 15 by 20 feet.

There is a steel floor 10 feet wide suspended above the charging floor. The main bins are discharged into the individual furnace chutes from this floor. This floor also extends out over each furnace to make charging of the electrodes less difficult.

There are five 750-kilowatt furnaces of the Alby type arranged two on each side and one at the end of the room. Only four of these are operated at a time, one being kept in reserve. There is also a 450-kilowatt furnace of the arc type with a shallow hearth for refining. Three of these furnaces are operated with direct current at 60 volts and one by single-phase current at the same voltage. In the four open-top furnaces an electrode 48 by 10 inches by 6 feet long lasts about 10 days, whereas in the covered-top furnace they last 14 to 16 days. The electrodes project about 10 to 12 inches into the charge, which is not molten at the top, and are consumed down to about 2-foot to 1-foot lengths.

The lining of magnesite and tar in one ferro-alloy furnace had been in use for 22 months and the other six months. The power had not been off these furnaces at all during that time except for about 15 minutes a week when electrodes were changed. The current is conducted from the power house at the end of the furnace room by copper cables. The connection to the carbon-block base of each furnace is made by many small wires leading to the main cable line.

The Meraker company produces 4,000 of calcium carbide and 2,000 tons of ferro-chrome annually. Turkish ore and English anthracite coal are used for the manufacture of the ferro-chrome. In calcium-carbide production the power consumption is about 0.375 kilowatt-year per metric ton or 1.5 kilowatt-hours per pound. The power consumption for ferro-chrome is 0.75 kilowatt-year per metric ton or three kilowatt-hours per pound. The carbide and ferro-chrome are tapped every two and four hours, respectively. The carbide is sized before being packed into 50-kilogram (110-pound) drums, and the ferro-chrome is broken into lumps less than six inches square and packed into 200-kilogram (440-pound) boxes.

This company makes only ferro-chrome that can be produced without the refining process described later, so that the carbon content of its product varies from 2 to 10 per cent. It is very easy to make a ferro-chrome of 5 per cent carbon content without refining the product. The cost of manufacture of carbide is given at about $30 per metric ton. All products are sold through a syndicate of manufacturers organized to prevent over-production if possible. The company employs 120 men, part of whom work an eight-hour shift and part 10 hours. The men in the furnace house are on an eight-hour shift. The minimum wage is $1.25 for a 10-hour shift.

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A number of interesting bulletins recently have been issued by the Monarch Engineering & Mfg. Co., Baltimore, dealing with the Monarch melting furnaces, forges, heaters, galvanizing and tinning furnaces, rivet heating furnaces, core ovens and other devices manufactured by this concern. A special bulletin is devoted to a new heating forge, for tool and drill steel. Monarch furnaces, both portable and stationary types, for melting brass, aluminum and other non-ferrous metals, using either gas or solid fuel, are thoroughly described and illustrated.


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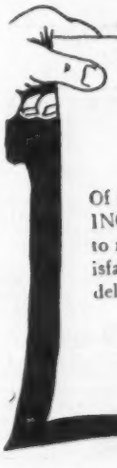

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**Men Wanted**
Minimum, 50 words, $1.00. Each additional word, 2c. All capitals, 50 words, $1.50. Each additional word, 3c.

**Position Wanted**
Minimum, 25 words, 50c. Each additional word, 2c. All capitals, 25 words, 75c. Each additional word, 3c.

**Miscellaneous Classified**
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## Men Wanted

**WANTED:—AN ACCOUNTANT, SALES** manager, and a superintendent, who are willing to back their ability in the above departments, to the extent that they will subscribe to the capital stock of a successfully operated chilled plow factory. State in first letter experience, salary would expect and how much would invest. Heads of departments must be financially interested. This is not the ad. of an employment broker, but of factory's general manager. Address Box 385, THE IRON TRADE REVIEW, Cleveland, O.

**WANTED MECHANICS. HIGH GRADE** tool and gauge makers. Class 1 machinists on machine tool repairs. Lathe and boring mill machine operators also operators on Jones & Lamson and Gisholt machines and automatics. If you are active and have a good employer's record, state exactly your experience and class of work desired and send application to Box 399, THE IRON TRADE REVIEW, Cleveland, O.

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**POSITION WANTED AS GENERAL SUperintendent steel plant, open hearth or blooming mill; graduate Massachusetts Institute Technology in mechanical engineering and metallurgy; 17 years' experience; 8 years as assistant general manager steel corporation; open for engagement April 1; highest quality reference. For full particulars and interview Address Box 370, THE IRON TRADE REVIEW, Cleveland, O.**

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**POSITION WANTED: — FIRST CLASS** steel range man with 24 years' experience; can make first class templets for hotel or family ranges; can handle men to good advantage; best of references. Address Box 398, THE IRON TRADE REVIEW, Cleveland, O.

**AS FOUNDRY SUPERINTENDENT OR** manager; graduate in metallurgy and mix by analysis; have wide experience on loams, dry and green sand in brass, bronze, steel and iron; expert on molding machines and metal plates; estimating; wood and metal patternmaking; spent 5 years as chief foundry engineer and adviser in U. S. Navy yard; age 37, married; can furnish highest references. Address Box 380, THE IRON TRADE REVIEW, Cleveland, O.

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**MECHANICAL DRAFTSMAN, TECHNIcal graduate, twelve years' experience, heavy machinery, rolling mill and railroad practices. Also shop experience. F. J. Andersen, 514 Glenn Ave., Ellwood City, Pa.**

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## Opportunities

**FOR SALE: — FOUNDRY AND MA**chine shop in Kansas City. Established 25 years. Doing $100,000 to $125,000 business yearly. One and one quarter acres land, brick buildings, located in the center of manufacturing district. Have practically a monopoly on architectural castings in this city, and making a large amount of machine castings. Can make very attractive price and terms. Address Box 378, THE IRON TRADE REVIEW, Cleveland, O.

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